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ERRATA.

Page 29, for description of figure *read* :—Skull of *Felis tristis* (young male), × 1, with anterior præmolar, × 3.
,, 85, line 8, for *Valisneria* read *Vallisneria*.
,, 165, line 9 from bottom, for Simla Hill States.—Bashahr. *read* Chamba.
,, 205, line 1, *for* choronology *read* chronology.
,, 206, line 26, *for* 1227 *read* V. Sam 1217.
,, 208, line 30, *for* 1446 *read* A.D. 1442.
,, 214, line 9, *for* 1574 *read* śaka 1514.
,, 214, line 42, *for* 1630 *read* śaka 1530.
,, 219, line 31, *for* 1698 *read* A.D. 1718.
,, 437, line 9 and 10, *for* part of the larger circumference *read* larger part of the circumference.
,, 462, last line, and p. 463, first line, *for* out world-side, *read* world outside.
,, 540, line 1, *for* amalgum *read* amalgam.
,, 565, last line above footnote, *for* Changthus *read* Chaungthus.
,, 579, line 4 from top, *for* Shephard *read* Shepherd.

DIRECTIONS FOR BINDING.

The pages of the Journal should be bound first: they are numbered in arabic numerals. The pages of the Proceedings should follow: they are paged consecutively in roman numerals. The Index is paged in continuation of the Proceedings.

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◆

I. Some notes on the Maurya Inscription at Sarnath.

By Arthur Venis.

This inscription is carefully discussed by Mr. J. Ph. Vogel in a recent issue of the Epigraphia Indica, Vol. viii., pp. 166—71. I have to make a few remarks on points which seem open to further inquiry. Consideration of the last lines of the Sārnath text and of the context at Rupnath, where these recur though slightly modified, leads me to re-open that much debated question as to the significance of the numerical expression, 256, which is found at Rupnath, Sahasram and Brahmagiri. And the suggestion I make is—and it is no more than a suggestion—that this 256 is a date, namely, the year of Asoka's Coronation reckoned from the year of Buddha's Illumination.

TEXT.

1 Devā

2 Ela

3 Pāṭa +————————————n pi saṁghe bhetave e chuṁ kho

4 Bhikhu vā bhikhuni vā saṁghaṁ bhākhati se odātāni dusani saṁnaṁdhāpayiyā anāvāsasi

5 Āvāsayiye hevaṁ iyaṁ sāsane bhikhusaṁghasi ca bhikhunisaṁghasi ca viṁnapayitaviye

6 Hevaṁ devānaṁpiye āhā hedisā ca ikā lipi tuphākaṃtikaṁ huvā ti saṁsalanasi nikhitā

7 Ikaṁ ca lipiṁ hedisaṁeva upāsakānaṁtikaṁ nikhipātha tepi ca upāsakā anuposathaṁ yāvu

8 Etaṁeva sāsanaṁ visvaṁsayitave anuposathaṁ ca dhuvāye ikike mahāmāte posathāye

9 Yâti etaṁeva sâsanaṁ visvaṁsayitave âjânitave ca âvatake ca tuphâkaṁ âhâle

10 Savata vivâsayâtha tuphe etena viyaṁjanena hemeva savesu koṭavisavesu etena

11 Viyaṁjanena vivâsâpayâtha

TRANSLATION

His Majesty ... ... [?]

The Church is not to be divided. But whoever will break up the Church, be it monk or nun, must be made to put on white dress and live in a place which is not a formal residence. Thus must this edict be announced to the Order of Monks and to the Order of Nuns.

Thus His Majesty commands. One such writing was inscribed for you at the place-of-assembly, that there it should remain. And just such another writing you must inscribe for the laity. The laity also should come on the Posatha days to be inspired with confidence in this edict. And on the Posatha days in all months, every officer is to come for the Posatha service to be inspired with confidence in this edict and to learn it.

And throughout your district you must everywhere make known the edict according to the letter of it. So, too, in all quarters where strongholds are, you must cause it to be made known according to the letter of it.

REMARKS.

Short as it is, our inscription may be conveniently divided into the three paragraphs shewn in my translation.

The first paragraph contains the S'âsana or injunction proper. Any monk or nun attempting to break up the Church must be made to put on white dress and live beyond the official boundaries of convent or monastery. Temporary suspension, if not expulsion, from the Order is to be the penalty for schism. A similar injunction in almost the same words is found in the so-called Kosambi Edict at Allahabad and again at Sanchi (Bühler's Papers, Indian Antiquary, Vol. XIX and E.I., pp. 366—67). Unfortunately, the opening portion of each of the three inscriptions is too badly injured to admit of certain restoration. Some remarks on this point will be made below. We must wait for more light epigraphical to know the special circumstances that called forth this edict against schismatics. It certainly confirms the tradition that Asoka dealt vigorously with heretical practices in some churches of his time. And all the collateral evidence points to Asoka and to no other as the author of this edict speaking with the undisputed authority of the Head of the Buddhist Church.

Paragraph 2 conveys instructions to the King's officers. They are informed that a *lipi*, or writing, to the tenor of the cited injunction had been inscribed for their benefit at a certain place (—a Head Quarters Office or Circuit House of the District may be meant by the word *samsalanasi*—see below). And they are ordered to have a similar writing inscribed for the benefit of the laity. This inscription must have been placed within the boundaries of the monastery at Sarnath; for the District Officers and laity are told to come on every Uposatha day and look at it. A reason appears for these repeated visits to the inscription: to *see* the edict of the King is to have one's faith in it confirmed, *visvaṁsayitave.*

The last paragraph contains a formula to which reference has already been made as found at Rupnath (Bühler I. A., Vol. XXII), and which reads as the usual ending of a Government Order, demanding attention in set phrase to the very letter of the edict. The word which I translate 'strongholds' is not found in the Rupnath inscription. If this word can mean the garrisons of a district or province, and if these were not under the direct control of the mahamātas as civil officers, we can understand why the latter should be told "to cause the edict to be made known" in places beyond their jurisdiction

NOTES ON THE TEXT.

Line 3.—Mr. Vogel reads *ye-kena pi*, by joining together the fragments *i c* and *i d* (see facsimile in E. I.) in what he has no doubt was their original position. I cannot even after handling the fragments persuade myself that they belong together; nor can I locate the akṣaras *ye ke.* The third akṣara may be read *no.*

Line 4.—Mr. Vogel reads *bhikhati*[1] and *ānāvāsasi.* I read *bhākhati* (=Skr. bhankṣyati) which accords with *bhetave* of l .1, and is confirmed by the akṣaras in l 4. of the Sanchi edict I also read *anāvāsasi*, which is clearly the word in l. 5 at Sanchi. *Cf.* Sacred Books of the East, Vol. XVII, p. 388, for the technical sense of this word as a place which is formally declared to be not-a-residence.

Lines 6, 7.—*Nikhita, nikhipātha, saṁsalanasi* hang together The two verbal forms I understand in the technical sense, which the Vācaspatya assigns to the word *nikṣepa* = śilpihaste saṁskārārthaṁ dravyāderarpaṇe ca. At any rate, before a *lipi* or inscription can be placed on a site, it must be passed through the engraver's hands to be inscribed. *Saṁsalanasi*, in grammatical relation with *nikhitā*, should denote a concrete thing or place; and I have taken it as = Skr. saṁsaraṇa. Some of the meanings of this word in the dictionary are :—highway; resting place outside the gates of a city; meeting or junction (saṁgati saṁgama) In Pali the word can mean a wheel or circuit: *cf.* S.B.E. Vol. XX, p. 176, note—Saṁsaraṇakiṭiko nama cakalayutto kiṭiko. And as suggested by the word anusaṁyāna of the edicts I attempt to render it by 'place of assembly.' If, however, it is to be taken as = Skr. Saṁsmaraṇa, we shall be reduced to the expedient of giving figurative meaning to *nikhitā*, namely, 'deposited in your memory,' and literal meaning to *nikhipātha* in the very next line. The 'place of assembly' may have been at Pataliputra or at Kausambi.

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[1] Mr. Vogel in a letter to me accepts my reading and interpretation of *bhākhati.* He is kind enough to explain that the proof-copy of text and translation, which I had set up during last winter, arrived too late for notice in his official contribution to the Epigraphia Indica.

Line 10.—I read *Kotariṣaresu* doubtfully · the akṣara after *ri* is sufficiently unlike the signs for dental *sa* which occur so frequently in our inscription.

Lines 11, 12 — *Vivāsayātha* and *vivāsapayāthā* I derive from the root vas *to shine* : *cf.* Professor Oldenberg, Z.D.M. G., Vol. XXXV, p. 475, and my discussion below of other derivations proposed for these words.

THE VERSIONS AT SANCHI AND KAUSAMBI.

Bühler took the *mage kaṭe* of the Sanchi version (E.I. Vol. II, p. 367) as something material. But is not the path of paths, the path of Dharma, more appropriate to the entire context of the three versions of this edict? In lines 2 (end) and 3 I think these akṣaras are legible :—otapa + vutike bhaṁte madhūriyake; and the last two words are seemingly adjectives agreeing with mage in a figurative sense. In the Kausambi impression (I.A. Vol. XIX,) l. 4, the akṣaras a v s y y would represent *āvāsayiye* of l. 5 at Sarnath. The Kausambi edict ends with this word, which the reader will note is the final word of the S'asana proper. If (as I have suggested) this is the *lipi* meant in paragraph 2 of the Sarnath record, it is of further interest as bearing on the proposed identifications of the ancient city of Kausambi.

THE EDICT OF RUPNATH, SAHASRAM AND BRAHMAGIRI.

For an excellent summary of the various interpretations of the numerals 256, which occur in these edicts, the reader should turn to Mr. Fleet's article in the Journal of the Royal Asiatic Society, 1904. He states his own view at pp. 21—26. Mr. Vincent Smith concurs and writes in his "Early History of India" (1904) :—"These Minor Rock Edicts are dated expressly 256 years after the death of Buddha, and thus fix that event as having occurred in or about the year 487 B.C., according to the belief current at the Court of Pataliputra, only two centuries and a half after its occurrence" (p. 149) The opposite pole of opinion is reached by M Senart who holds that the alleged date in the era of the Nirvāṇa at Rupnath rests on an illusion and a mistake.

The new edict at Sarnath would seem to throw light on these conflicting opinions. With the Rupnath inscription it shares the formula which I have described as the ending of a Government

Order—āvatake tuphākaṁ āhāle, etc. But Rupnath has, in addition, the words vyuthena and vivāsā, and the indication 256 expressed in words and in figures. The points I desire to make are first, that in both edicts the formula yields the most satisfactory meaning when its verbal forms are derived from the root vas *to shine*; second, that at Rupnath the words vyutha and vivāsā may be derived from the same root and furnish good sense as The Illumined One and Illumination respectively; and, third, that this derivation may help to the better understanding of the number 256.

As to my first point, let us see what meaning can be got out of the formula by deriving its verbal forms from the root vas, *to dwell*, and the composite vivas=to *depart from home*. This is what Mr. Fleet does at p 22, and after making certain corrections in the Rupnath text he adds—'the meaning is then plain enough: —"And by this same suggestion, intimation, (it is directed that) to whatsoever extent (there may be) an employing, a deputation, of you, (to that extent) you should with active exertion, energetically, depart from home"; namely, to travel abroad either to engrave the edict in other places also, or, in a general way, to propagate the teaching of it.' Mr. Fleet's rendering of *ahāle* and restoration of *saṁvana* do not concern us here. His version —you should depart from home—gives no plain sense at Sarnath. At Rupnath it has to be eked out with an explanatory clause of Mr. Fleet's own making—'or, in a general way, to propagate the teaching of the edict.' But this clause is unnecessary, if the verbal form *vivasetaviye* be derived from vas *to shine* and mean *to be made bright, made known.* To support his derivation of vivas from vas *to dwell*, Mr. Fleet quotes a passage from the Pali: namassamāno vivasemi rattiṁ—'worshipping I spend the night' (p. 20). But as Professor Kielhorn points out in the same number of the J.R.A.S (p. 364) the root of the verb is vas *to shine*, and the literal translation of the sentence is—'worshipping I cause the night to grow light.' M. Senart is among those who accept the derivation from vas *to dwell*. And this is his rendering at Rupnath: "And with those instructions .... set ye forth on your mission to all the world." But this again hardly fits into the context of the edict at Sarnath

Then, in regard to my second point, it is sufficient for me to accept, for example, Mr. Fleet's lucid translation of the last words of the Rupnath text (p. 26) making the necessary substitutions for his *wanderer* and *wandering*, thus:—'And this same precept was composed by the Illumined One: of centuries two hundred and fifty and six years have elapsed since his Illumination.' This gives clear and good sense. I am not here bound to deal with the grammatical difficulties presented in the text. But the explanation I now propose does, of course, commit me to the view that Asoka refers to Buddha and his great Illumination. And now I have to face the obvious objection that, so far as our knowledge goes, Indian sects always date from the *death* of their founders, and that this was the case with Buddhists in India and in Ceylon and elsewhere. Mr. Fleet has even anticipated my present suggestion and rejected it for the reason just stated. He says (p. 17) that he can detect nothing to indicate that Buddha's first appearance as a teacher at the age of thirty-five (according to tradition) was ever employed in Buddhist chronology, though he is prepared to admit that it would be much more likely to have served as an epoch-making event than the *abhiniṣkramaṇa*, or departure from home, at the age of twenty-nine, to which Professor Rhys Davids called attention as the event alluded to in the records under discussion. I must reply to the objection in as few words as possible. Asoka's ideas of chronology are unknown to us. We are dealing merely with probabilities. Are my points such in number and in circumstance as to warrant a probable conclusion in regard to Asoka's mode of dating his documents?

In the third place, then, attention must be drawn to two special features in the edict at Rupnath, Sahasram and Brahmagiri. It is the only edict that contains any numerical indication of the kind 256. It is the only edict in which Asoka mentions events in his life without dating them in regnal years. This second peculiarity has, I believe, escaped the notice of scholars. Elsewhere Asoka invariably dates these events from the year of his coronation (abhiṣeka); and, to leave no doubt as to the point of reckoning, he uses the words *abhisita abhisitena*, etc. Looking then to his invariable practice in this respect, we can hardly suppose that the omission of any reference to the regnal year, in the case of an edict which exists in several recensions and records important events in Asoka's life, is a matter of pure accident. On the other hand, if the R.-S.-B. edict is exceptional as being the only one that leaves us in doubt as to whether events recorded in it took place before or after the coronation, we may suppose, if not stopped by clear proof to the contrary, that the edict was issued in the coronation year and recorded events in Asoka's life prior to that great occasion: we may even indulge in the conjecture that the numerical expression 256 served the definite purpose of recording the coronation in years to be reckoned (as our preceding paragraph suggested) from the year of the great Illumination. And we may round off the argument by explaining that only a single announcement of this date 256 is made, because subsequent indications in regnal years would be sufficient. Of course, I assume among other things that Asoka desired to assign a date to what would thus be his First Edict. But even so, I cannot pretend to know why he should prefer to reckon from the Illumination rather than from the Death of the Buddha. I might say--if here it has pleased Asoka to associate his own solemn consecration as king with the first year of the Buddha's ministry, the spirit is akin to that regal piety which at Bhabra published an official summary of the Good Law for use in the churches. And more might be said along these vague *a priori* lines.

But it is time to deal with figures. I don't mean to enter on that terrible question of the date of Buddha's death. I can *prove* nothing. But I can produce a coincidence to show that my hypothesis is not hopelessly barred at the outset by limits of chronology. For this purpose I take two dates which are beyond suspicion in the sense that neither is the result of a calculation based on the evidence of the R.-S.-B. edict itself. I find 480 B.C. and 269 B.C. among the many dates respectively assigned to the Death of Buddha and the Coronation of Asoka. These dates I manipulate thus :—

B.C.	480	. Buddha's Death according to tradition
+	80	Length of his life according to tradition.
B.C.	560	His Birth · ,, ,, ,,
–	35	Intervening period ,, ,, ,,
B.C.	525	His Illumination.
–	256	Number of years lapsed, according to R.-S.-B. Edict.
B.C.	269	... Asoka's Coronation.

This arithmetic proves nothing; and, in the words of Max Müller, I am quite aware of the danger of unexpected confirmations of one's own views. But the coincidence as I term it is not without significance. I really base my chronological table on the date 269 B.C. for Asoka's coronation. And this date Mr. Vincent Smith has placed beyond reasonable doubt (J.R.A.S. 1901). If then Mr. Vincent Smith's evidence for the date 269 B.C. is, as I understand it is, independent of Buddhist traditional dates for the events of Buddha's life, and also of the R.-S.-B. edict itself, it must be held to lend support to the tradition and to my hypothesis of an Asoka era (to use a phrase) dating from the Illumination, so far of course as these may accord with that evidence. On the other hand, the hypothesis may stand even if these two dates are proved incorrect in the end. It certainly falls to the ground, if any clear and distinct statement in the inscriptions of Asoka can be found to prove that the events in his life, which are recorded in the Rupnath-Sahasram-Brahmagiri Edict, took place *after* his coronation. Be this as it may, the verbal forms from a root *vas*, which occur at Rupnath and Sarnath, will still demand elucidation.

2. A list of 138 new words, chiefly European, that constantly occur in modern Persian newspapers; collected from the newspapers of the past six months.

By MUHAMMAD KAZIM SHIRAZI, *Persian Instructor to the Board of Examiners.*

Communicated by LIEUT.-COLONEL D. C. PHILLOTT.

ابونه	F.	*Abonné*, but used in the sense of "subscription."
آدرس	E	Address.
الکتریسته	E.	Electricity.
اکادمی	F.	*Académie.*
اسکله	F.	*Escalier*, jetty.
ارتیکل	F.	Article.
اتاموبیل	F.	*Automobile.*
امپراطور	It	*Imperatore.*
اکوسي	F	*Écossais.*
اروپ	F.	*Europe.*
امیرال	F.	*Amiral.*
اسکناس	R.	Bank-note.
افیقفونه اپیکا	E	Ipecacuanha.
اکسپوزیسیون	F	*Exposition*, Exhibition.
انفلوانزه	E.	Influenza.
اولتیماتم	F.	*Ultimatum.*
اود سلیس	F.	*Eau-de-Seltzer.*
ایودن	E.	Iodinium.
بالون	F.	*Ballon.*
باستیان	F	*Bastion.*
بلیت	F.	*Billet*, Ticket.
بانگ	E.	Bank.
بای سکل	E	Bicycle.
برلیان	F.	*Brilliant*, Diamond.
بودجه	F.	*Budget.*
بال	F.	*Bal*, Ball, dance.

باطری	F.	*Batterie.*
باطالیان	F.	*Batallion.*
بنیان	E	Banian.
پارک	E.	Park.
تاکتیک	F	*Tactique.*
تن	E.	Ton (weight).
تلفن	F.	*Téléphone.*
ترنها	E.	Trains (Railway).
تعرفه	E.	Tariff (Originally from Arabic تعریفه)
تیاتر	F.	*Theatre.*
تمبر	F.	*Timbre*, Postage-stamp.
تلگراف	F.	*Télégraphe.*
توس کردن		To toast, to drink the health of.
تلمبه	T.	Fire brigade.
ترپیل	F.	*Torpille*, Torpedo.
تراجدی	F.	*Tragédie.*
تونل	E.	Tunnel.
پاکت	F.	*Paquet*, Envelope.
پارلمان پارلمنت	E. or F.	Parliament, *Parlement*
پسته پوسته	It.	Post, Mail.
پلس پولیس	E	Police
پرنس	F.	*Prince*
پلتیک	F.	*Politiques.*
پروفسر	F.	*Professeur*
پالتو	F	*Paletot*, great-coat
پروغرام	F.	*Programme.*
پرزانته کردن		*Présenter*, to introduce.
جنه	E.	Guinea.
جیگاره	F.	Cigarette [but سیگار *sigār*, cigar]
جغرافی	F.	*Géographie*
جلاتینا	E.	Gelatine
جنرال	F	*Général.*
جلیدقه جلیت قه	F	*Gilet*, waist coat

جولاجي	F.	*Géologie.*
ديپلوماسي	F. or E.	*Diplomatie*, Diplomacy.
دكتر	F.	*Docteur.*
درشكه	R.	Droskey.
ديپلومات	F.	*Diplomate*, Diplomatist.
ديا بيطوس		Diabetes.
دبجيتال		Digitalis.
دلار	E.	Dollar.
ديپلوم	F.	*Diplôme*, Diploma.
دينا ميت	F.	*Dynamite.*
دوک	E.	Dock.
دما	R.	Duma.
راپورت	F.	*Rapport.*
رومان	F.	*Roman*, Novel.
ژنرال	F.	*Général* (Mil. rank).
ژاندارم	F.	*Gens d'armes*, Police.
ژورنال	F.	*Journal.*
سماور	R.	Samooar.
سيگار	E.	Cigar.
سوپه	F.	*Souper*, Supper.
سكرتري	E.	Secretary
شارژدفر	F.	Chargé d'Affaires.
شنل	F.	*Chenille*, Morning-gown.
شوسه	F.	Chaussée.
صالدات	R.	*Soldat*, Soldier.
طرمنتين	E.	Turpentine.
فرانک	F.	*Franc.*
فابريک	F.	Fabrique.
فناستين	E.	Phenacetin.
فسيل	F.	*Fossile.*
فرماسون	F.	Franc-maçon.
قونسل	F. or E.	Consul.
قونسل جنرال	F. or E.	Consul General.
كنفرانس	F.	*Conférence.*
كنسرواتور	F.	Conservateurs.
كروازير	F.	Croisière, cruisers.
كالونل	F.	*Colonel.*
كپتان	F. or E.	*Capitaine*, Captain.

كمون	F.	*Commune.*
كنه كنه		Quinine.
كمسيون	F	*Commission.*
كميدى	F.	*Comédie*
كمپاني گمپاني	F or E	Company
كوپ	E	Cup.
گاز	F. or E	Gas.
گالري	F	*Galerie.*
گازت	F	*Gazette*
گيلاس	E	Glass
لژ	F.	*Loge,* Opera-box
لامپ	F or E	Lamp
لات	E.	Lot.
لبرال	E.	Liberals
لاتری	F.	*Loterie.*
لاستيك	F. or E.	Elastic.
لوكوموتيو	F	*Locomotive.*
ليره	It	*Lira*
لرد	E	Lord
مبل	F.	*Meubles,* Furniture.
ماركه	E	Mark.
مانور	F.	*Manœuvre.*
مليون	F. or E	Million.
مليار	F.	*Milliard*
ماشين	F	*Machine.*
مسيور	F.	*Monsieur*
مستر	E.	Mister
متراليوز	F	*Mitrailleuse,* Gatling-gun.
مدال	F.	*Médaille.*
ميل	F. or E	Mile
ميكروب	F	Microbe.
ماژر	F	*Majeur.*
مرسي	F	*Merci*
مانش	F	*La Manche,* English Channel.
منيجر	E	Manager.
منوار	E.	Man of War
موزه	F	*Musée* Museum

ملخیت		Malachite.
مغازه	F[1].	*Magasin*, shop.
موزیک	F.	*Musique*.
واگون	E.	Wagon.
واغون		
ویزه	F.	*Visa*.
هورا	E.	Hurrah !
ینگی دنیا	T.	America (*lit.* " New World ").

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[1] From the Arabic *Makhzan*.

3. Notes on the Freshwater Fauna of India. No. IX.—Descriptions of new Freshwater Sponges from Calcutta, with a record of two known species from the Himalayas and a list of the Indian forms.

By N. Annandale, D.Sc

All the forms described below have been found within the last few months in the Museum tank, Calcutta. *Spongilla carteri*, Bowerbank, and *S. decipiens*, Weber, also occur in this tank, which is a very favourable habitat for the lower aquatic invertebrates. Indeed, I know of no habitat in the neighbourhood of Calcutta so favourable. I hope to publish later an account of observations on the biology of several of these Freshwater Sponges.

SPONGILLA PROLIFERENS, sp. nov. (Fig. 1.)

Diagnosis.

Sponge encrusting, thin, surrounding or spreading over the roots, leaves and stems of water-plants, and often matting them together, leaf-green (when exposed to light), rarely extending for more than about 2 square inches; the surface frequently covered with minute, rounded branches not mor than 3 mm. long, which separate as buds from the parent at an early stage. Dermal membrane delicate, often widely separated from the underlying parts and forming conspicuous, flask-shaped collars round the oscula, which are congregated; pores few and inconspicuous; deep channels covered only by the dermal membrane frequently occur on the surface. Skeleton spicules slender, smooth amphioxi, generally crescentic but sometimes almost straight, 25—30 times as long as their greatest transverse diameter, gradually pointed. They are loosely bound together in strands which form an irregularly reticulated skeleton, and on the surface project vertically upwards through the dermal membrane Flesh spicules short, slender, cylindrical amphioxi or, more commonly, amphistrongyli, which are profusely and evenly microspined, the spines being straight and conical; the spicules about 9 times as long as broad. Gemmule spicules often identical with the flesh spicules, but less frequently amphioxous and on an average stouter and shorter. Gemmules separate, subspherical or spherical, often slightly flattened on one face; the single aperture lateral; the chitinous coating rather stout. surrounded by a layer of microcell substance of variable thickness in which the gemmule spicules are arranged tangentially and vertically, crossing one another irregularly; the aperture provided with a stout foraminal tubule, which is constricted near the middle, projects beyond the microcell coating and opens by means of a heart-shaped aperture distally.

Average diameter of gemmule	... 0·55	mm.
„ length of skeleton spicule	... 0·36	„
„ „ „ flesh spicule	... 0·085	„
„ „ „ gemmule	... 0·075	„

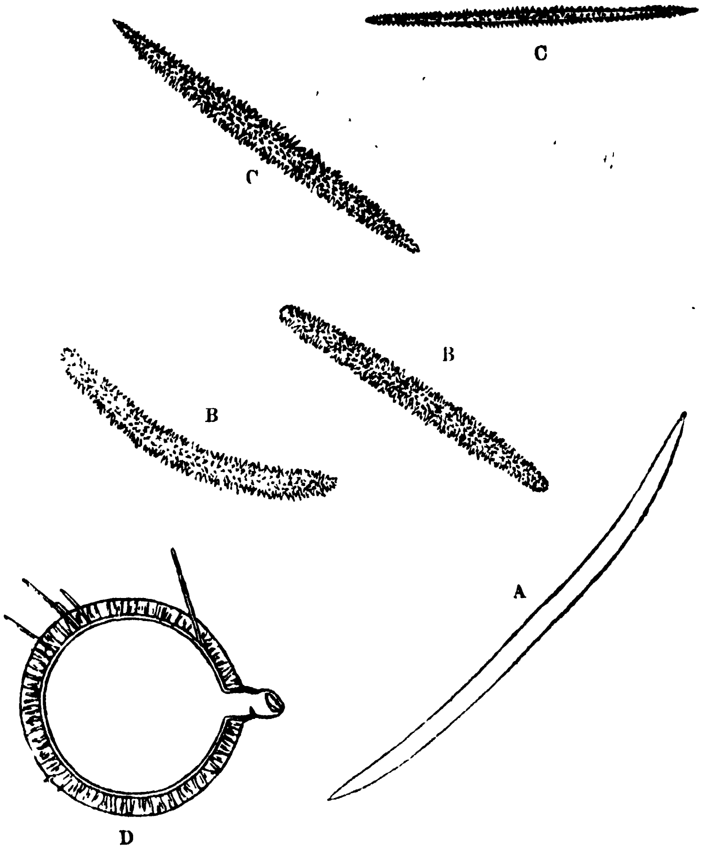

Fig. 1. *Spongilla proliferens.*

A = skeleton spicule, × 200. B = gemmule spicule, × 530. C = flesh spicule, × 530. D = gemmule in optical section, × 55.

Remarks.

This sponge is related to Carter's *Spongilla alba* from Bombay and Bowerbank's *S. cerebellata* from central India. It may be recognized by the structure of its gemmules. Its most remarkable feature, however, is its prolific production of buds, which as regards origin are nothing more than branches that become separated from the parent by the ingrowth of the dermal membrane round their bases. I hope to discuss their structure on another occasion. The flesh spicules are very numerous in the dermal membrane, in which they lie pointing in all directions parallel to the surface of the Sponge. They also occur scattered irregularly in the sarcode. The skeleton is feebly coherent owing to the small amount of spongin present.

SPONGILLA CRASSISSIMA, sp. nov. (Figs. 2, 3.)

Diagnosis.

Sponge massive, spherical or spindle-shaped, primarily encrusting, very hard, dark leaden-grey, smooth on the surface as a whole, but with spicules protruding through the delicate external membrane in a slanting direction; oscula grouped in star-shaped areas, which are often approached on the surface of the sponge by radiating channels covered only by the dermal membrane for a considerable distance. Skeleton spicules smooth straight or feebly curved, cylindrical, as a rule rounded at the extremities but bearing a minute conical terminal projection (which contains the end of the axial thread), occasionally pointed abruptly, from 11 to 18 times as long as broad; immature skeleton spicules always slender and amphioxous. Skeleton formed of very firm spicule fasciæ and extensive spongin webs. No flesh spicules. Gemmule spicules short, cylindrical, irregularly, somewhat sparsely microspined, straight or curved, rounded or abruptly pointed at the ends, about 13 times as long as broad. Gemmules small, spherical, covered with a thick layer of large air-cells and bound together in errant groups of from four to eight; each gemmule provided with a stout, bent foraminal tubule, which is

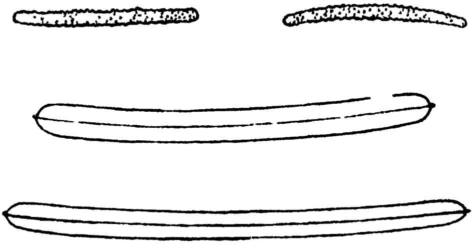

FIG 2. *Spongilla crassissima.*
Spicules, × 260

enlarged at the distant extremity and projects outwards through the air-cells; each group bears a single external layer of gemmule spicules, which lie along its surface; each gemmule has a denser layer of similar spicules immediately outside its chitinous coat, to which they are parallel or tangential; subsidiary apertures sometimes occur.

Var. *bigemmulata.*

Sponge less massive than in the typical form; its surface more or less ridged; colour dull green. Skeleton containing less spongin although very firm Gemmules arranged both in errant groups and as a pavement layer at the base of the Sponge on its support. Gemmule spicules generally more slender than in the typical form; those in the errant gemmule groups slightly more slender (in the variety) than those on the pavement layer.

Average diameter of the gemmule ...	0·28	mm.
,, length of the skeleton spicule	0·3	,,
(Typical form) average length of the gemmule spicule	0·1275	,,
(Var. *bigemmulata*) average length of the gemmule spicule (fixed gemmule)	0·1	,,
(Var. *bigemmulata*) average length of the gemmule spicule (errant) ...	0·105	,,

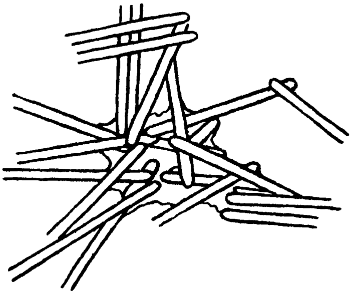

FIG. 3. *Spongilla crassissima.*
Node of skeleton, showing spongin web.

Remarks.

The skeleton in these Sponges is constructed of stout fasciæ of spicules very firmly bound together by spongin, which also occurs in the form of extensive, sometimes perforate webs at the nodes of the skeleton and occasionally as delicate filaments between the fasciæ. The fasciæ are arranged in a close reticulation somewhat irregular as regards its meshes, which are crossed diagonally by single spicules and fasciæ composed of two or three spicules. The mesh-work surrounds the canals, which radiate outwards from the support of the Sponge and are relatively narrow.

S. crassissima is closely related to the widely distributed and variable species *S. fragilis*, Leidy; but apart from the form of the skeleton spicules and the great development of spongin in the skeleton, the enlargement of the distal extremity of the foraminal tubules of the gemmules is characteristic. The errant gemmule-groups bear a close resemblance to those of *Spongilla decipiens*, Weber; but in the latter the air-cells surrounding each gemmule remain much more distinct from those which surround the other gemmules of the same group than is the case in the new species, and the gemmules are not quite spherical. I have taken great care in satisfying myself that the pavement layer of gemmules is quite absent in the form here defined as typical of the species; while it is a conspicuous feature of the form regarded as a variety of the same species.

Young amphioxous skeleton spicules are numerous immediately under the dermal membrane and in the neighbourhood of the gemmules (which are confined to the inner parts of the sponge): a few of the young spicules are also found lying parallel to the skeleton fasciæ. Many of these amphioxi are as long or almost as long as the skeleton spicules, into which they develop (as is evident from the study of intermediate stages) by a thickening of the body of the spicule which does not affect its extreme ends. It is this mode of growth that produces the characteristic skeleton spicule of the species. I was at first inclined to regard the amphioxi in *Spongilla crassissima* as gigantic microscleres, or rather as microscleres varying from extremely minute filamentous structures *to* spicules as long as, but not as thick as the megascleres. But this view is precluded by the fact that intermediate stages between the extremes as regards these amphioxi on the one hand and between the amphioxi as a whole and the characteristic megascleres which have already been incorporated in the skeleton, on the other, occur frequently, and that the amphioxi are most abundant in parts of the Sponge in which either active growth or active change is most evident; while those amphioxi which occur in neither of these regions generally lie parallel to the fasciæ of the skeleton, ready to be affixed to it by the secretion of spongin when they shall be mature. That growth is active on the external surface of the Sponge is proved by the fact that snail-shells which chance to come in contact with it are rapidly overgrown by it; while that considerable changes take place in the neighbourhood of the gemmules is evident from the structure of these bodies The amphioxi near the surface are not in the dermal membrane but below it. In spite of the large amount of spongin present in the skeleton, the membrane contains comparatively little of this substance and is as delicate as in softer members of the genus.

EPHYDATIA INDICA, sp. nov. (Fig. 4.)

Diagnosis.

Sponge encrusting, flat, flimy, thin, matting together the roots of floating plants, almost colourless even in a bright light; the surface smooth; pores and oscula scattered, inconspicuous; external membrane delicate. Skeleton spicules subcylindrical, rounded at the extremities, somewhat irregular in outline, often thicker at one end than at the other, smooth or sparsely spined, 22—25 times as long as broad. (Irregularly shaped amphioxi occur among them occasionally.) Skeleton of very loose and irregular texture, formed of feebly coherent fasciæ. No flesh spicules. Birotulates with a long, stout shaft covered, especially towards the ends, with straight, slender spines, which are mostly set at right angles to the main axis; rotulæ somewhat feebly developed, consisting of circles of similar spines; one rotula often slightly larger than the other; diameter of rotulæ not greatly exceeding that of the shaft, which is about 10 times as long as broad. Gemmules small, spherical, scattered in the interior of the Sponge, each surrounded by a thick layer of microcell substance, in which a single layer of birotulates is embedded vertically; the single aperture on a conical prominence.

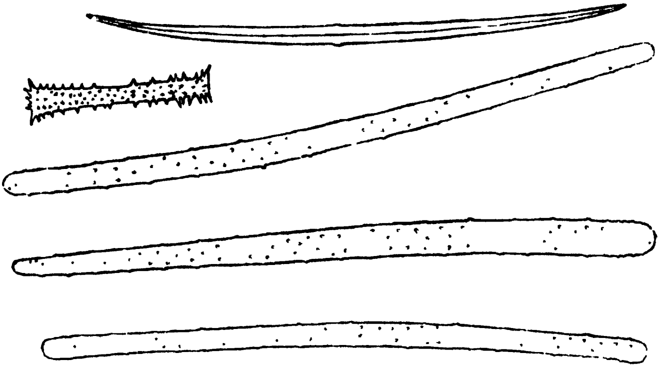

FIG. 4. *Ephydatia indica*
Spicules, × about 350.

Average diameter of gemmule ...	0·13	mm.
,, length of skeleton spicule	0·258	,,
,, ,, ,, birotulate spicule	0·065	,,
,, diameter of rotulæ ...	0·00875	,,

Remarks.

This Sponge is perhaps related to Pott's *Meyenia crateriformis* from North America [1] and is very distinct from those members of the genus which have hitherto been recorded from India. It is common in Calcutta.

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[1] *Meyenia* or *Ephydatia crateriformis* has also been recorded from Ireland, but Weltner is apparently doubtful of the identification.

TROCHOSPONGILLA LATOUCHIANA. sp. nov. (Fig. 5.)

Sponge forming small, shallow, cushion-shaped masses on the stems and roots of water-plants, pale, yellowish-brown in colour; surface minutely hispid; pores and oscula inconspicuous; older specimens divided into two transverse layers by a definite membrane, the gemmules being confined to the lower layer. Skeleton spicules smooth, stout amphioxi about 15 times as long as broad in the middle, subfusiform, often with one or several irregular projections. (Stout amphistrongyli, often dilated in the middle, occur among them occasionally). Skeleton very loose and irregular. No flesh spicules. Birotulates of simple structure; the rotulæ circular, flat or nearly flat, sometimes not quite equal; diameter of rotulæ 4½ to 5 times that of the shaft, which is about 2⅔ times as long as broad. Gemmules small, scattered, non-adherent, spherical, covered with a thin layer of microcell substance; the aperture on a slight prominence.

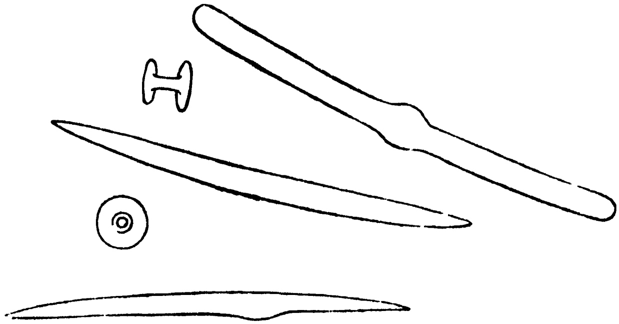

FIG. 5. *Trochospongilla latouchiana*
Spicules, × about 200

Average diameter of gemmule	0·2	mm.
,, length of skeleton spicule ...	0·28	,,
,, ,, ,, birotulate spicule	0·0175	,,
,, diameter of rotula .	0·02	,,

Remarks.

This form is related to the N. American species *Trochospongilla leidyi* (Bowerbank), from which it is differentiated by its more slender skeleton spicules and the flat or nearly flat discs of its birotulates. Possibly it is no more than a variety of the American species. I have not seen a specimen more than about two inches long and a quarter of an inch deep. All those examined have been narrow and elongate, owing to the fact that they were on the slender stems and roots of water-plants. In spite of their small size, some of them had evidently persisted long enough for a new layer of skeleton and sarcode to be formed on the top of one in which numbers of gemmules had been produced. Each gemmule is enclosed in an irregular basket-work of skeleton spicules.

As regards the generic position of this and the succeeding form some doubt may be expressed. *Trochospongilla*, as accepted by Weltner, is differentiated from *Tubella*, by the fact that the discs of the birotulates are both equal and entire. In the present instance they are often both equal and entire; but at least as often the outer disc is distinctly, if very slightly, smaller than the inner. In *Trochospongilla leidyi*, however, which, as I agree with Weltner, is a true *Trochospongilla*, this is also the case, so far as can be judged from Pott's figures (*Proc. Acad. Sci. Philadephia*, xxxiv., pl. xi, fig 1.) In Vejdovesky's original definition of the genus, the birotulates are described as having discs which are "smooth with entire margins"; no mention is made of their equality or inequality. As regards most of the genera into which the "sub-family" Spongillinæ has been divided, it is difficult to draw exact lines of demarcation; indeed, in most cases, one "genus" merges gradually into another. It might be well to regard *Ephydatia*, *Trochospongilla*, *Tubella*, *Heteromeyenia*, and possibly *Carterius* as no more than sub-genera of the genus *Meyenia*; but the Spongillinæ, as a whole (including all the fresh-water genera) form a group so ill-defined that great difference of opinion is inevitable as to their sub-division.

No species of the genus *Trochospongilla* has hitherto been recorded from Asia. I name *T. latouchiana* after Mr. T. Latouche, of the Geological Survey of India.

TROCHOSPONGILLA PHILLOTTIANA, sp. nov. (Fig. 6.)

Sponge flat, encrusting, very thin, spreading in large patches over flat surfaces, almost colourless; surface minutely hispid, pores and oscula inconspicuous. Skeleton spicules small, moderately stout, cylindrical amphistrongyli sparsely covered with rounded prominences, straight or almost straight, 16 to 18 times

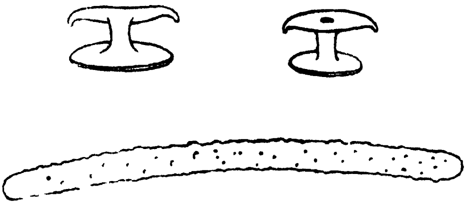

FIG. 6. *Trochospongilla phillottiana.*
Spicules × about 370.

as long as broad. Skeleton forming a close reticulation with triangular or subtriangular meshes. No flesh spicules. Birotulates with the edge of the outer disc turned inwards and the lower disc flat, the diameter of the discs about five times that of the shaft, which is about half as broad as long. The gemmules separate, cylindrical, with a thin microcell layer, in which the birotulates are embedded vertically, their upper discs forming prominences on its external surface; the aperture infundibular, each gemmule enclosed in a dense basket-work of skeleton spicules; the gemmules forming irregular, one-layered patches in the base of the sponge, not distributed uniformly over its support.

Average diameter of gemmule	... 0·18	mm.
,, length of skeleton spicules	... 0·1775	,,
,, ,, ,, birotulate spicules	... 0·015	,,
,, diameter of amphidisc	... 0 0225	,,

Remarks.

This Sponge is readily distinguishable from the preceding species by the form of its skeleton spicules. It often extends for at least 60 square inches over the surface of brickwork at the edge of the tank, but is never more than four or five millimetres thick The patches of gemmules at its base are of very irregular outline, and often form almost a reticulated pattern; they are a striking feature in living specimens, in which they are of a bright golden-yellow colour. Owing to the situations it affects, *T. phillottiana* is more liable to desiccation than the majority of the Freshwater Sponges found in Calcutta. When it dries up the gemmules remain attached to its support on account of the firm receptacle of skeleton spicules in which each is held. The affinites of the species are probably with the preceding form. *T. phillottiana* is named after Lieut.-Col. D. C. Phillott, Secretary to the Board of Examiners, Calcutta, and Honorary General Secretary of the Asiatic Society of Bengal.

II.

The following note refers to the lake named Bhim Tal, which is situated at an altitude of 4,500 feet in the outer range of the central Himalayas, and to a smaller tarn, one of those known as the Seven Lakes (Sath Tal), at a distance of about three miles from Bhim Tal and at a slighty lower altitude Naini Tal (6,400 feet) was also searched for Sponges, but in vain.

At the end of the rains (the time of my visit) Bhim Tal is rather over a mile in length and about a quarter of a mile broad. Its depth has been artifically increased during the last few years for purposes of irrigation, and varies at present at different spots from about 15 to over 100 feet. Such water-weeds as grow in it were entirely or almost entirely submerged, and the water was thick and slightly malodorous, apparently owing to the growth of a the slender stems and roots of water-plants. In spite of their small size, some of them had evidently persisted long enough for a new layer of skeleton and sarcode to be formed on the top of one in which numbers of gemmules had been produced. Each gemmule is enclosed in an irregular basket-work of skeleton spicules.

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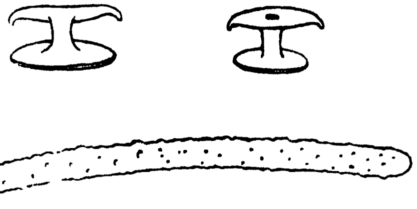

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So far as I have been able to discover, the only lower Invertebrate hitherto recorded from the lakes has been *Ceratium kumaonense*, which was described by Carter as long ago as 1871, in the *Annals and Magazine of Natural History*, vol. VII, p. 229. This organism multiplies greatly from time to time, giving the water, according to Carter's informant, a "rusty brown" colour. Mr. R. K. Ruxton, of Bhim Tal, tells me that when this occurs, or at any rate when the water "turns like blood," the natives of the district believe that the god of the lake is angry and demanding a human sacrifice.

Collections of Protozoa, Oligochæta, Rotifers and Entomostracous Crustacea were made both in Bhim Tal and in Naini Tal; but these will be submitted to specialists in Europe who have been kind enough to undertake their description. Several forms of Polyzoa (*Lophopus* and *Plumatella*), with which I hope to deal later, were also found in Bhim Tal. I was disappointed not to find in any of the lakes. or in smaller pools in in their vicinity, any species of *Hydra*, although many likely spots were examined.

SPONGILLA CARTERI, Bowerbank.

Probably the only growing Sponge taken in Bhim Tal (a minute specimen attached to a floating water-plant) should be referred to this species; but its immature condition and the total absence of gemmules renders the identification a little doubtful. There can be no doubt, however, as regards the numerous gemmules of *S. carteri*, which were found floating on the surface both of the lake itself and of other bodies of water in its vicinity. These gemmules were quite normal and agreed in every particular with those produced in the Calcutta tanks. The consistency of this Sponge differs very greatly in different pools even in the same vicinity. It appears to be, so far as can be said at present, the most widely distributed in India of the Indian species.

EPHYDATIA ROBUSTA (Potts). (Fig. 7.)

Meyenia robusta, *Potts* in *Proc. Acad. Nat. Sci. Philadelphia*, xxxix. (1887), p. 225, pl. ix., fig. 5. **Ephydatia robusta** (Potts), *Weltner* in *Archiv f. Naturgesch.*, 1895, p. 127.

Among the gemmules of *Spongilla carteri* from Bhim Tal, there are a few belonging to the genus *Ephydatia*. These I have little hesitation in identifying with Potts' *Meyenia robusta*, which, as Potts himself says, may be a variety of *Ephydatia fluviatilis*. The original definition of the form is as follows:—

"Sponge massive, encrusting. Skeleton spicules subfusiform, pointed, smooth. Gemmules scarce, birotulates of large size and generally "monstrous" in form; irregularly shaped, shafts abounding in spines as long as rays of the rotulæ, cylindrical of conical."

Potts' description of the gemmule spicules applies exactly to those from Bhim Tal, except that among the latter there are a few which have smooth shafts. The average length of the birotulates is 0·047 mm; and the average diameter of the rotulæ 0·027 mm. In Californian specimens the equivalent measurements are approximately 0·0237 mm. and 0·02 mm. It would appear, therefore, that in Kumaon specimens the gemmule spicules are slightly larger than in those from America. A few of the gemmules from the former locality had skeleton spicules adhering to them which were "subfusiform, pointed, smooth." Unfortunately they were either broken or so small as to suggest that they were immature. The larger spicules of this class, however, must have had when complete approximately the same actual and relative dimensions as those of the typical *E. robusta*. The gemmules were spherical, with a single, deeply depressed aperture, which was not provided with a foraminal tubule. There was only one layer of gemmule spicules, which were quite vertical in their cellular coating. They varied considerably in size.

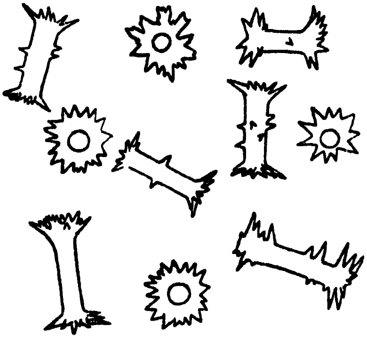

FIG. 7. *Ephydatia robusta.*

Spicules of gemmules from Kumaon, × about 340.

Ephydatia robusta has only been recorded hitherto from California; so that its occurrence in Kumaon is of considerable interest. The material at my disposal is not sufficient for it to be possible to decide whether or no the Indian form should be regarded as a subspecies or variety of the American.

III.

LIST OF THE INDIAN SPONGILLINÆ.

The list of the Freshwater Sponges recorded from India now stands as follows:—

Genus SPONGILLA.

S. lacustris var. *bengalensis*, Annandale. Lower Bengal (brackish water).

S. alba, Carter. Bombay.

,, *cerebellata*,[1] Bowerbank. Aurangabad in central India (Nizam's dominions); Lower Bengal (brackish water).

S. proliferens, Annandale. Calcutta.
S. carteri, Bowerbank Bombay; Kumaon (4,500 feet); Chota Nagpur; Calcutta; central India.
S. bombayensis, Carter. Bombay.
,, *cinerea*, Carter. ,,
,, *decipiens*, Weber. Calcutta.
,, *crassissima*, Annandale ,,
,, ,, var., *bigemmulata*, Annandale. Calcutta.

Genus EPHYDATIA.

E. mülleri var. *meyeni* (Carter.) Bombay.
,, *robusta* (Potts) Kumaon (4,500 feet).
,, *indica*, Annandale. Calcutta.
,, *plumosa* (Carter) Bombay.

Genus TROCHOSPONGILLA.

T. latouchiana, Annandale. Calcutta.
,, *phillottiana*, ,, ,,

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[1] I have lately (October, 1906) found *S. cerebellata* growing luxuriously in canals of brackish water near Calcutta, while Mr C Paiva obtained specimens in the present month in brackish pools at Port Canning. I strongly suspect that both this form and *S alba* will be found to be no more than varieties or phases of *S. lacustris*.—N. A., 21-xi-06.

4. Notes on the Freshwater Fauna of India. No. X.—*Hydra orientalis* during the Rains.

By N. Annandale, D.Sc.

In my recent account of the Bengal Hydra (*Mem. Asiat. Soc. Bengal*, i., No. 16, pp. 339-359) I was able to say very little about that part of the life history which is completed during the rains, *i.e.*, between June and November. During the present year, however, the discovery of a particularly deep and densely shaded corner of the Museum tank to which the polyps migrate during the hot weather, and in which they remain until the beginning of winter, has made it possible to study them in their natural surroundings at this season. No individuals which show any sign of sexual maturity have been found. All have had four tentacles and have been small, attenuated and practically colourless; but the majority have borne either one or two four-tentacled buds. I had not previously seen a four-tentacled polyp budding. It thus becomes clear that what may be called the summer phase of *H. orientalis* has habitually four tentacles and that after undergoing a period of rest in June it produces buds like itself, which are colourless and with four tentacles. I have been unable to obtain any evidence that the polyp produces additional tentacles after giving rise to a bud, and it is probable that the individuals which become densely pigmented at the end of October or in November, grow two additional tentacles and bear buds, are the offspring of the individuals which arise asexually in May or June.

The life cycle of *H. orientalis* affords an example of what may perhaps be regarded as an extremely simple form of alternation of generations. The four-tentacled summer phase gives rise asexually to the six-tentacled winter phase, which is potentially sexual. The latter phase, however, gives rise to the former again asexually as a rule, possibly by sexual reproduction occasionally. There are intermediate generations which are intermediate in structure as well as time, and the whole cycle has evidently been influenced if not produced by degeneration due to an unfavourable climate. It seems probable that the genus has reached tropical Asia from more temperate latitudes, in which it exhibits far greater vigour in several directions.

When I wrote the paper alluded to above I had not seen Prof. R. Hertwig's recent account[1] of his experiments on *H. fusca*, which was only published on August 1st, almost exactly at the same date as my paper. Prof. Hertwig proves by direct experiment that in the case of the species with which he deals, seemingly hermaphrodite individuals may, under certain conditions, become apparently diœcious. He therefore rejects Downing's *H. diœcia* as a distinct species, apparently with justice. My *H. orientalis* certainly bears (or bore in the earlier stages of its evolution) a relationship to *H. grisea* similar to that which *H. diœcia* bears to *H. fusca*; but there is this difference: while *H. fusca* and *H. diœcia* occur together, *H. orientalis* has not been recorded from the same localities as *H. grisea* and undoubtedly occurs apart from it. Whether it is a constant race or only a phase produced by the direct effect of climate on the individual could only be proved by experiment. It would be interesting to hatch eggs of the European *H. grisea* in Bengal, or to do the same with eggs of *H. orientalis* in Europe. The former experiment would probably be more easy to carry out than the latter, because of the rarity of the eggs of *H. orientalis* and their feeble vitality. It is to be hoped that it may be possible to make arrangements for such attempt.

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[1] "Ueber Knospung und Geschlechtsentwickelung von Hydra fusca," in *Biologisches Centralblatt*, xxvi, No. 16 (August 1st, 1906).

5. Note on a specimen of *Felis tristis*, Milne-Edwards, in the Indian Museum.

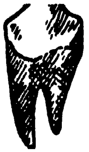
By N. ANNANDALE, D.Sc.

Felis tristis was described by Milne-Edwards[1] in 1872 from a very badly preserved skin, which had been purchased in Pekin and was said to have come from the interior of China. Elliott refigured the type in his *Monograph of the Felidæ* (1883), but no further specimens appear to have been recorded and the skull has not been described. Among a number of mammals received at the Indian Museum from the Calcutta Zoological Gardens, I have recently discovered a skin and skull of this rare cat. The specimen was originally obtained from the late Mr. Routledge, a well-known dealer, and appears to have come to Calcutta by sea; but no further information is available regarding it. It represents a young male apparently not quite adult. Unfortunately, no measurements were taken on the body; but it is evident that the animal was of stouter habit than *F. marmorata* and had a

ERRATA.

Page 29. For description of figure read: —

Skull of *Felis tristis* (young male), × 1, with anterior præmolar, × 3.



Gesnll of *Felis tristis* (young male), x 1, wiite anterior praemolai.

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[1] *Recher. des Mamm.* p. 223, pl. XXXI.

relatively larger head. The tail is long and of almost uniform width throughout. The following measurements are from the skin :—

Head and body	48·2 cm.
Tail[1]	50·7 ,,
Ear	4·0 ,,
Hind foot	4·2 ,,

Except in certain minor points the coloration agrees well with that of Elliott's plate ; but the spots on the sides are less distinct than they are in that figure, while the upper surface of the tail is greyer and there are indications of several vertical grey bars on each side of the body, owing to the tips of the hairs in the tracks they mark being paler than elsewhere. The fur is rather long, very close and soft.

The skull closely resembles that of *F. marmorata*, but is somewhat less massive as well as being smaller. The dentition is characterized by the fact that the anterior upper praemolar, as in *F. planiceps*. has two roots and is unusually well developed. The inner cusp of the first true molar is distinctly marked off from the rest of the teeth ; while the second molar is minute and has its two roots closely pressed, and partially fused together.

The following are the measurements of the skull :—

Maximum length	94 mm.
Zygomatic breadth	67 ,,
Length of palate (to apex of notch) ...	32 ,,
Breadth of palate between canines ...	13 ,,
Breadth of palate between carnassials (inner roots)	19 ,,
Interorbital breadth	16 ,,
Greatest breadth of brain-case	45 ,,

The following measurements of three skulls of *F. marmorata* are given for comparison ; but two of these skulls (B and C) represent older animals :—

	A	B	C
Sex	♂	♂	♂
Maximum length ...	100 mm.	102 mm.	112 mm.
Zygomatic breadth ...	73 ,,	77 ,,	77 ,,
Length of palate (to apex of notch) ...	34 ,,	38 ,, (approx.)	41 ,,
Breadth of palate between canines ...	15 ,,	17 ,,	15 ,,
Breadth of palate between carnassials (inner roots) ...	23 ,,	22 ,,	23 ,,
Interorbital breadth ...	19 ,,	19 ,,	18 ,,
Greatest breadth of brain-case ...	44 ,,	45 ,,	46 ,,

---

[1] Since the skin was made up the tail has shrunk. It is now slightly shorter than the head and body.

In none of these specimens is there any trace of the first upper praemolar, although A is a young specimen of approximately the same age as that of *F. tristis.*

Felis tristis, therefore, agrees with *F. marmorata* in type of coloration, in the form of the tail and in the majority of the cranial characters. Its tail, however, is perhaps relatively longer and its colours are darker, its habit is more robust, its size probably smaller, its fur longer, and its anterior praemolar better developed, having two roots. The last is the only certain character of any great importance. But for it—and it is just possible that it may be an individual variation—*F. tristis* might be regarded as a melanoid race of *F. marmorata* probably from a cold climate.

6. A note on Swertia tongluensis and on a new variety of Swertia purpurascens.

By I. H. Burkill.

Since *Swertia tongluensis* was described in this Journal, Vol. ii., new series, p. 319, I have been able to add to my knowledge of it by a second visit to Tonglu, in the Sikkim Himalaya, where the plant grows. It is not uncommon on the sides of Tonglu south, east and north—between 8,500 ft. and the summit at 10,074 ft.; and it occurs to the north of that mountain on the slope that faces it under Kalipokri. It grows with *Swertia Chirata*, Ham., very often, and always in similar places, *i.e.*, steep banks at the edge of an opening.

There is never any difficulty in distinguishing at a glance full-grown *S. tongluensis*, with its winged stem and elongated capsules, from *S. Chirata* with its round stem and short capsules *S. tongluensis* is just as bitter as *S. Chirata* and might be gathered for Chiretta; but I could not find any of it in the Darjeeling bazaar, where only the commoner and locally abundant *S. Chirata* was on sale.

When the buds open, both on *S. tongluensis* and on *S. Chirata*, the flowers face obliquely downwards and are shortly campanulate with strongly recurved corolla-lobes, and rather parallel stamens directed straight forward: but the flowers of *S. tongluensis* are a little smaller than the flowers of *S. Chirata*, and the livid patch on the petals just above the nectaries is not quite so marked When the capsules enlarge, there is seen to be a great difference between the two. As the flowers die, in both they turn upwards and the capsules becomes vertical.

On the same journey I gathered close to the Jorpokri dak-bungalow a *Swertia* that I at first thought to be a new species, but latterly decided to be a very distinct variety of *S. purpurascens*, Wall. The finding of it extends the known range of *S. purpurascens* eastward considerably. My plants grew in an open glade together with *S. dilatata*, C. B. Clarke; and on the bank at the edge of the glade was *S. Chirata*, Ham. The stem of *S. Chirata* is seldom vertical: the habitat of the plant, *i.e.*, banks, means that the sunlight is unevenly distributed, and the plant leans out to seek it. So too does *S. tongluensis*. But *S. dilatata* and this new variety of *S. purpurascens* (var. *ramosa*) are to be found on more even ground, and their main stem is vertical except in its lowest inch where it is always curved. Most Swertias of the section *Ophelia* seem to be decumbent as seedlings, and the consequence of this persisting is a bend at the base of the stem.

The tallest plant found was 80 cm. high. The lowest third or half of the stem was unbranched and had lost its leaves. The upper half or two-thirds bore very numerous paired decussate branches, ascending at an angle of 40°. In the number of the branches is the first difference between variety and type.

The stem is of a very dark claret-colour: the branches of first, second and third rank are successively lighter until we come to the capillary pedicels which are straw-coloured. From the bases of the leaves run down the stem or branches the narrowest of wings which bear minute purple papillæ: papillæ of the same character are also distributed round the stems below the nodes: they, however, do not distinguish the variety from the type; for it also has them. The second difference is in the leaves which in the variety are smaller than in the type, though otherwise similar: the papillae extend from the wings of the stem just on to the half-millimetre long petiole. The flowers nod at opening: they are smaller than in the type, and herein is the third difference; and further, I believe, that they do not open quite so widely: the gland I found to be single with its very marked margin developed above into a narrow membranous hood, and below connected with the androphore by an elevated frenum-like ridge, so that round the androphore are developed five shallow pits: these too may be present in the type. But a fifth and very marked difference is in the capsule; for, in the variety, it is very much shorter than that of the type,—so short that it is only just exserted at its maturity from the withered flower. The seeds are roundish-ovoid, clear yellow, and, for the genus as a whole, rather large. Type and variety do not differ in them.

I conclude with a brief latin description of the new form.

Swertia purpurascens, var., *ramosa*. *Herba* rigida, ad 80 cm. alta, in parte superiori ter et iterum ramosa, ramis densis. *Folia* inferiora ad anthesin delapsa. superiora glabra, in siccitate nigrescentia, petiolulata, late lanceolata, integra, basi acuta, apice subacuminata, tri-nervia, nervis lateralibus margini approximatis infra conspicuis, internodiis æquilonga vel breviora, maxima ad 30 mm. longa, atque ad 8 mm. lata, pleraque multo minora: petioli ad 1 mm. longi, marginibus basi in alas caulinas transeuntibus et papillas marginales gerentibus: stipula vera adest in forma lineæ fimbriatæ petiolos conjugentes. *Flores* numerosissimi, livido-lilacini, parvi. *Pedicelli* capillares ad 8 mm. longi. *Calyx* glaber, quinque-sectus, basi decem-angulatus, angulis alternis in margines loborum ineuntibus; lobi 3 mm. longi, anguste lanceolati, acutissimi, carinati. *Corollæ* tubus ·5 mm. longus: lobi acutiusculi, 4 mm. longi, 2 mm. lati, margine minute denticulati, unifoveolati; foveola distinctissima, crateriformis sed anguste cucullata e margine superiori, membrana e basi ad androphorum freno conjuncta. *Androphorum* quinque-angulatum, ·5 mm. longum. *Staminum* filamenta dilatata, basi connata, 2·5 mm. longa, infra minutissime aspera: antheræ ovatæ, versatiles, 1 mm. longæ, purpureæ. *Ovarium* antheras æquans: stylus nullus: stigmata 1 mm. longa, tarde divergentia recurvantia. *Capsula* ovoidea,

5 mm. longa, paullulo exserta, viridi-straminea. *Semina* lutea, ovoideo-globosa, lævia, 7 mm. longa.

Collegi in loco aëri aperto in silvis montosis haud procul ab hospitio Jorpokri, in districtu Darjeeling, alt. 8,000 ped., sub numeris 27746, 27747, 27748.

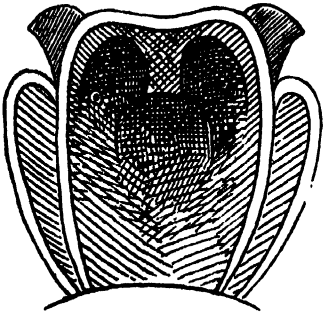
Habitu ramosa, et foliis parvis, et floribus parvis, et capsulis parvis facile distinguitur.

7. *Ascaris lobulata*, Schneider, ein Parasit des Darms von *Platanista gangetica*.

Von Dr. v. Linstow.

Referaten—

Schneider, *Monographie der Nematoden*, Berlin, 1866, pag. 44, 1 fig.
Krabbe, *Ofversigt. K. Danske Vidensk. Selsk. Vörhandl. Kjöbenhavn*, 1878, pag. 47, tab. I, fig. 2.
Tägerskiöld, *Zool. Jahrb. Abth. Anat.*, *Jena*, vii., 1894, pag. 467, tab. 28, fig. 37.
Stossich, *Bollet. Soc. adriat. Sc. Nat. Trieste*, Vol. xvii., 1896. pag. 43.
Stiles and Hassall, *Internal Parasites of the Fur-seal*; Washington, 1899, pag. 159-161, fig. 90-92.



Schneider beschrieb die Art mit wenigen Worten: Krabbe gab die Lippenbildung, die ich etwas anders sehe: Tägerskiöld fand die blinddarmartige Verlängerung des Darms nach vorn: Stossich, Stiles und Hassall bringen nichts neues.

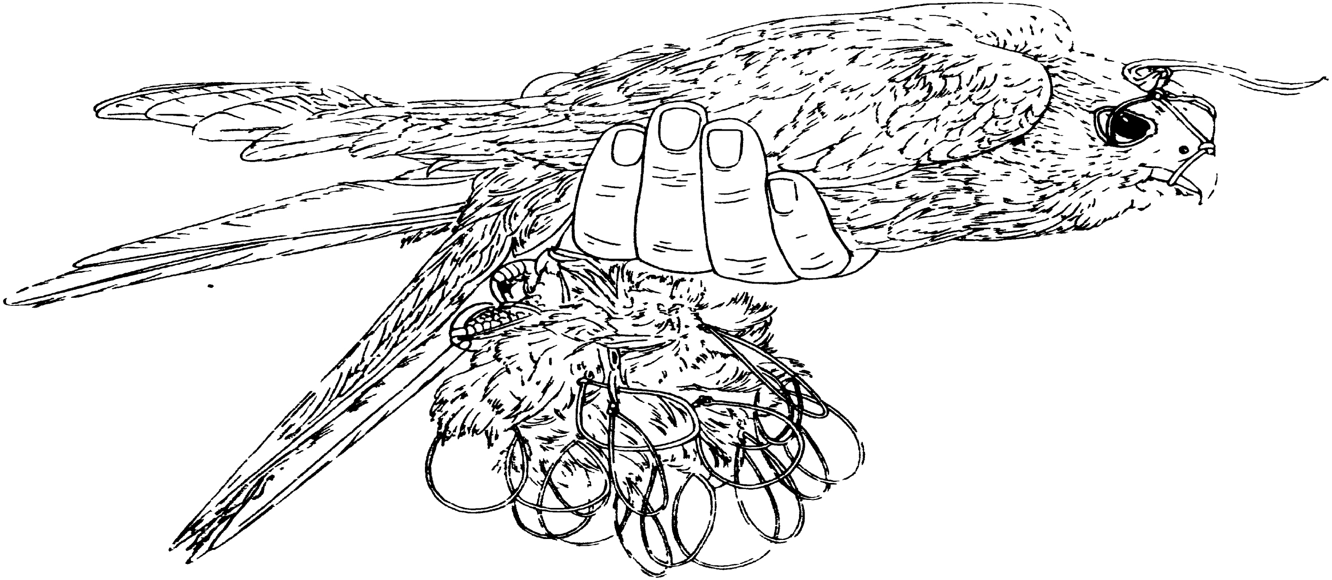
Cuticula quergeringelt: Lippen länger als breit, mit Nebenlippen, die vorn abgerundet sind und schräge Querstreifen tragen; sie haben $\frac{6}{7}$ der Länge der Hauptlippen; letztere sind vorn an der Innenseite rechts und links in zwei Vorsprünge verlängert, welche aussen eckig sind: Papillen klein, an der Grenze vom 2 und 3 Drittel: Dorsallippe 0·21 mm. lang und 0·17 mm. breit: Schwanzende in beiden Geschlechten breit abgerundet, dorsal mit einer kegelförmigen Verlängerung: der Darm ist nach vorn in einen langen Blinddarm fortgesetzt: der Oesophagus nimmt $\frac{1}{18}$ der Körperlänge ein.

Männchen 30 mm. lang und 1·1 mm. breit: das Schwanzende nimmt $\frac{1}{150}$ der Gesammtlänge ein: die Spicula sind 2·37 mm.

lang. am Schwanzende sehr zahlreiche Papillen: die præanalen stehen in 2 Längsreihen.

Das Weibchen hat eine Länge vom 36 mm. bei einer Breite von 1·15 mm: das Schwanzende misst $\frac{1}{72}$ der ganzen Länge: die Vulva liegt an der Grenze vom 1 und 2 Viertel des Körpers: die Eier sind 0·052 mm. lang und 0·042 mm. breit; die dünne Eihaut steht weit vom Dotter ab.

Die Art lebt in der Mundhöhle, im Magen, im Dünn-und Dick-Darm von *Platanista gangetica.* Sie scheint sich zunächst einige Zeit in der Mundhöhle aufzuhalten. Die hier gefundenen Exemplare enthalten aber noch keine reifen Geschlechtsproducte, welche sich erst im Darm bilden.



Bārak of Lagaṛ (Female of Falco Jugger) Reproduced from a Photograph

8. Notes on the Lagar Falcon (*Falco jugger*).

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

(Plate No. I.)

In Hindustani the female of this very common falcon is called *lagar* or *laghar*, and the male *jhagar*. Jerdon gives the weight of a female as 1-lb. 4 oz. The lightest weight, however, recorded by me is 1-lb. 6¾ oz, and the heaviest 1-lb. 8 oz.

This common Indian falcon is unknown to the falconers of Baghdad or of Persia. Blanford says it occurs in Baluchistan about Khelat and Quetta, but has not been met with farther west. I do not recollect having seen one anywhere between Fort Munro and Kingri in British Baluchistan.[1] Blanford further says that *F. jugger* has not been observed in Assam and Burma. However in Vol XVII, No. 2, of the Journal of the Bombay Natural History Society, 1906 (p. 495), under a "List of Birds found in the Myingyan District of Burma," by K C. Macdonald, the author writes: "*Falco jugger*, the Lugger Falcon, local name 'Gyo-theing'—the only true falcon I have observed in the district. It is however, common and breeds freely on the high cotton trees near the river and elsewhere from January to March." The late Sardar Sher Ali, once Wali of Kandahar, told me that the *lagar* was not found in Afghanistan. I, however, frequently observed it, one year, between November and February, in the little hill-station of Parichinar, close to the Paiwar Kotal.

In a wild state this falcon preys on small birds, such as quails starlings,[2] parroquets, house pigeons, and also on *sāna* lizards (*Uromastix*), bats, locusts[3] and perhaps, like the Saker falcon,[4] on field-rats. Unlike Shahins and Peregrines it will carry off chickens. Probably it also preys on *See-see* Partridges, and in the spring on the Short-eared Owls (*Asio accipitrinus*) migrating out of India. Under a *lagar's* eyrie in a cliff I have found the feathers of numerous kestrels,[5] and of a few *shikras*. I have seen a pair of these plucky falcons drive away from their hunting ground a female Saker Falcon (*chargh*) that had intruded, and another pair stoop at and harass a fox; and I have trustworthy information of a wild *lagar's* stooping repeatedly at a hare. Villagers have sometimes told me that *lagars* kill[6] hares. Lieut.-Colonel S.

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[1] I, however frequently observed *Shāhīns* near these places throughout the breeding season.

[2] It is generally supposed that hawks do not prey on starlings as the flesh is bitter. I have seen wild Sakers (*F. Cherrug*) as well as *lagars* stoop and break up a flock of starlings I have, too seen wild Shāhīns (*F peregrinator*, etc.) fly at them, hugging the ground till underneath the flock, and then suddenly shooting up into its midst.

[3] In India all hawks feed on locusts.

[4] F Cherrug, *the Saker* or *Cherrug Falcon*; called *Chargh* in India and *Charkh* in Afghanistan

[5] Trained peregrines will sometimes fly at kestrils. I once lost a saker for some twenty minutes and found that she had killed and eaten a wild *shikra* (Astur badius).

[6] The Indian hare of the plains rarely, if ever, exceeds 3½lbs. in weight.

Biddulph told me that he once put up a Rock Horned-Owl (*Bubo bengalensis*), which was then chased and buffeted by a pair of wild *lagar* : he galloped after it, and after two or three flights secured it with the aid of the *lagars*

When trained this falcon is persevering and plucky, but though it also 'waits on' well, it does not 'ring up' well. The 'haggard' (*turināk*) and the young immature bird (*chūz*) are both trained, never the eyess. The best birds are, I think, 'haggards' of one moult, or young birds caught not earlier than the end of November. When "aigrette" feathers were the rage, many bird-catchers in the Kapurthala State and elsewhere (*Machhis*, *Jhivars*, and *Muṣallis*, and certain other castes) kept *lagars* during the rains, and flew them at Paddy-Birds.[1] The special quarry of this falcon when trained is Paddy-Birds, Common Crows, Night-Herons, and hares. When flown at hares, natives cast off more than one falcon, and slip a dog or two as well. A female *lagar* will sometimes, however, take a hare single-handed by 'binding' to its head. The *lagar* has been trained to take the Houbara Bustard, but it seems too slow for this flight: it can only kill on the ground. In the Kapurthala State, it is said to have been trained to take the Large White Egret and the Purple Heron: both birds are easy quarry, especially the latter. Lieut.-Colonel S. Biddulph had a 'tiercel' that used to take teal. An old Nawab of Hyderabad, Deccan, tells me he has trained it to take the Common Heron.[2] H.H. the late Mīr 'Alī Murād of Sindh[3] used. at one time, to train it to "ravine deer," but, I fancy, with indifferent success.

The *lagar* is local in its habits. It remains paired throughout the year, and hunts in pairs. Lieut. Colonel E. Delmé Radcliffe in his pamphlet on Falconry states that it "does not assume its perfect adult plumage till the third year." Year after year a pair may be observed hunting in the same spot. If the pair kill some large quarry, such as a pigeon, they feed on it together; but if the quarry is a small bird, one hawk bears it off. It is an early breeder. According to Captain G. F. L. Marshall ("Bird Nesting in India") the nest is to be found in Upper India throughout the month of January. At Zām, near Tonk, in the Derajat, I found on the 17th of March a nest with four eggs in a tree, the young birds just issuing out of two of the eggs. In 1905 a pair nested in the trees near the church in Wellesley Square. Calcutta, and I frequently

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Falcons do not, usually take a hare by flying straight at it and seizing it like a goshawk; they stoop at it repeatedly and knock it about till it is exhausted

[1] With the exception of the Red-headed Merlin (*turumtī*) and the *shikra*, the *lagar* is the only hawk that can be flown during the rains. Moulting peregrines are flown at Paddy-Birds in some districts, just to keep them in exercise No hawk can be flown in the hot weather proper.

[2] Not, I expect, "on the passage."

[3] The Ameer of Burton's "*Falconry in the Valley of the Indus*" He was a keen falconer, and kept up a large old-fashioned establishment of hawks for every kind of flight.

observed a pair, probably the same, in the Maidan.[1] Some *lagars* appear to be partially migratory. A native falconer and experienced hawk-catcher, in my sevice, told me that he once in the autumn came across some twenty or thirty *lagars* hawking grasshoppers[2] in one place. My informant also told me that he had in the plain of Gandi 'Umar Ḵẖān, about 25 miles from Dera Ismail Ḵẖan and opposite the *Taḵẖt-i Sulaymān*, caught as many as eight *lagars* in one day, during the in-migration: he further stated that these migratory or "hill *lagars*" arrive a little before the saker falcons, but that one or two early *sakers* generally hang on their wake, and live by robbing them. Other hawk-catchers have told me that these "hill *lagars*" are, on the in-migration always single, never paired.

Blanford writes: "* * *F. jugger* is exactly intermediate in structure, as it is in plumage, between the Peregrine group and *F. cherrug*." The *lagar* is to the peregrine what the country-bred horse is to the English thorough-bred. In habits, however, it is nearer the Saker; for, like it, it bears extremes of heat and cold, has a coarse digestion, frequents sandy deserts, probably seldom drinks, and seldom, if ever, bathes in water.[3] Like the Saker it too moults easily and quickly. To the touch, its flight-feathers have a hard and dry feeling something like those of the flight-feathers of a kite: they have not the softness of a Saker's nor the springiness of a Peregrine's. Unlike the Saker, the *lagar* does not dislike the flesh of Paddy Birds. Possibly, too, it can be fed without risk on the flesh of ducks and other water birds; not so the *charg̱h*. Does it, during the moult, eat small stones ("rangle"), as do peregrines and shahins? I think not; but as wild *lagars* can be caught at any time of the year and bought for perhaps as little as two pence,[4] they are seldom kept during the moult, hence information on this point is scanty.

Once when Houbara-hawking in the desert under the hills near Dera G̱ẖazi Ḵẖan, I noticed a pair of wild *lagars* 'waiting on' high up over some village children, who kept beating out a small bird from the bushes. As the bird made a dash for the shelter of the next bush, one of the *lagars* would make a determined stoop; but the bushes were too close to each other for the hawk to be successful. Sometimes the bird got lost, when the *lagars*, tired of 'waiting on,' sailed away to some distance; but when the children found another bird and cried, "Hoo hoo, ha ha,"[1] they returned and resumed their 'waiting on'. My falconers told me that this kind of natural hawking was a common pastime of village children in the Panjab.

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[1] I have also seen a large falcon near Howrah Bridge, and another roosting in the Eden Gardens. They appeared to be Shahins or Peregrines, but it was not light enough for me to identify them.

[2] Gilbert White remarks that birds of prey occasionally feed on insects. I once saw a pair of vultures in the hills picking up flying ants that were issuing out of the ground. That all hawks eat locusts is a fact well known to Indian falconers and hawk-catchers, but I have never seen one hawking grass-hoppers. A bird-catcher tells me that if a *shikra* is too cunning to be enticed by a quail or a sparrow, it can be caught in a *bāl-chhatri* with a *labāna* (an insect like a mole cricket) as a bait.

[3] It probably takes dust baths.

[4] The first hawk the writer ever bought was a trained *lagar* that killed Paddy-Birds. It was bought for about 3*s*. 6*d*.

On another occasion, in the desert near Dera G͟hazi K͟han, I came across a small island of low tamarisk trees, on which some crows and a pair of wild *lagaṛs* were resting. My orderly and I galloped in and out of the trees to try and keep the crows on the wing, while the *lagaṛs*, 'waiting on' low down, stooped at the crows as they were flushed. The crows could not be induced to leave their cover, though the hawks did not stoop as though in earnest. Although trained *lagaṛs* take crows, I have never seen wild ones do so. An eyas *lagaṛ* I had 'flying at hack'[2] used, in play, to stoop at roosting crows, but when it was seated on a tree-top the crows used to stoop at it.

That a pair of *lagaṛs* so frequently haunts the vicinity of a village may be due to the assistance the birds derive from cattle and children, who, as they move about, disturb and flush the prey.[3]

Amongst falconers the *lagaṛ* occupies an inferior position, but amongst hawk-catchers or '*bārakīs*' it is highly prized, for it makes, as is detailed below, a better *bārak*[4] than any other kind of hawk.[5]

That birds in migration do not fly in a bee-line to their destinations, but, to a great extent, follow the well-defined routes of passes, rivers, and coast-lines, is a fact that has long been known to, and made use of, by Indian hawk-catchers; as also the fact that hawks are jealous birds and love robbing their kind. So, when the hawk-catching season approaches, the *bārakīs* take their accustomed posts; for saker-catching in certain open plains, especially those opposite the passes, for Peregrine-catching on the banks of the rivers: each *bārakī* has, of course, at least one *bārak*, probably a *lagar*, which is prepared as follows:—

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[1] Identical or nearly so, with the old European hawking cry.

[2] 'Flying at hack' is keeping nestlings in a state of liberty to enable them to develop their flight-muscles.

[3] When manœuvring with my squadron in the long grass in the bed of the river at Dera G͟hazi K͟han, we were always closely followed by two or three harriers that chased the black partridges as they were flushed.

Gilbert White writes: "Horsemen on wide downs are often closely attended by a little party of swallows for miles together, which play before and behind them, sweeping around and collecting all the skulking insects that are roused by the trampling of the horses' feet."

Similarly I once had as many as five or six excellent flights after a lark with a wild Merlin, the lark, after ringing up, dropping and hiding under a clod. The Merlin, unsuccessful, at last got tired out.

[4] *Bārakī* (Hindus) "one that flies a *bārak*": *bārak uṛāna* "to fly *bāraks*, to catch hawks by means of a *bārak*." Next to the *lagaṛ*, the best *bārak* for a *charg͟h* is a kite. For a Merlin, a Kestril can be used. A bird-catcher tells me that about two inches should be cut off the end of the Kestril's tail. On one occasion a Peregrine tiercel was taken by a *bārak* of a *turumti* or "red-headed merlin."

[5] Some hawk-catchers affirm that a *turinḍk jhagaṛ* (or 'haggard tiercel' of *F. jugger*) is better than the bird in the immature plumage, and that wild hawks will sometimes come close to a young *lagaṛ* and then sheer off without closing, whereas if a 'haggard' be cast up they will close with it readily. This is perhaps a fancy.

Three or even four of the flight-feathers of each wing are tied together to impede the flight, the ends of the strings that bind the feathers being knotted with some of the small feathers under the wings to prevent the strings slipping down and coming off over the ends of the feathers. To close the beak, a piece of string is doubled and knotted twice in the middle, the two knots being about a finger's breadth apart. The small loop between the two knots is passed over the beak, the doubled end of the string lying on the crown of the hawk's head. A third knot is made under the chin, and the loose ends, one on each side of the neck, are brought up and tied to the doubled end on the crown. To render the feet powerless, the hind claw of each foot is bound back to the shank, and the legs are then hobbled together with stout string. To the centre of the hobble and on the top of the feet is bound what is in Panjabi called a *khuddū*, that is a stuffed ball garnished with feathers to simulate a small bird, and furnished with nooses. The *khuddū* is two or three inches in diameter and weighs about two ounces; it is usually made of the coarse native cloth called in Panjabi *khaddar* and is stuffed either with soft hair or better with feathers: if stuffed with the latter, it should be lined with cotton-wool to prevent the egress of the feathers through the coarse cloth. In the ball are long, coarse stitches of twine, and to these stitches are firmly fastened horse-hair nooses made of three or four horse hairs knotted and twisted together when wet. Small pieces of the skin and feathers of a small bird are pushed in under the stitches so as to conceal the ball, and many *bārakīs* add a small piece of scarlet cloth to represent blood. Through the underside of the ball a piece of string is stitched, and by its means the *khuddū* is tied firmly to the centre of the hobble: it must be so tied that, when the *bārak* settles, the nooses project outwards and upwards, so that a stooping hawk gets its feet entangled. Before use, the *bārakī* fills his mouth with water, and then blows it out in a forcible spray, so as to well wet the *khuddū*. The nooses are then opened and arranged and the feathers pulled into place, and the whole put in the sun to dry. When dry the *khuddū* is again examined, and, if necessary, re-arranged. Finally the thread with which the eyes are seeled is loosened, so that about a third to a half of the eyes is opened.[1]

The hawk, thus prepared, is thrown into the air. At the first flight it will fly perhaps a hundred yards; after that perhaps three hundred, flying not more than fifteen feet from the ground. After casting it off, the hawk-catcher squats and watches. If there is a hawk anywhere in the vicinity, it will at least come up and have a look: it may make a snatch at the supposed quarry while the *bārak* is in the air, in which case both birds fall together to the ground; or, reaching the spot after the *bārak* has settled, it may make one or two stoops and so eventually get entangled.

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[1] If the *bārak* has been caught and used for some days, it is kept on its perch with its eyes 'unsealed,' the seeling threads being drawn together when it is taken up to be flown.

If, after a minute, no hawk makes its appearance, the hawk-catcher approaches the *bārak* and secures it by means of a stick, which he stretches out and inserts between its legs, over the hobble. If the stick is not used, or if the eyes of the *bārak* are not seeled, it will probably rise and fly off a few hundred yards every time its owner gets within a few feet of it.

The *bārak* is flown repeatedly in the morning, till the sun gets too hot and hawks and other birds cease questing and soar out of sight in a cooler atmosphere. It is also flown again in the late afternoon till dusk. The *lagaṛ* being a hardy bird bears all this fatigue.

Besides *charg͟hs* a good deal of rubbish is also caught, harriers, kites, buzzards, small eagles, and other *lagars*. On these the *bārakī* feeds, not only his *bāraks*, but also the falcons he catches.

Whether large eagles are ever secured by a *bārak*, I cannot say. The first time I flew a *bārak*, a Ring-tailed Fish Eagle (*Haliaetus leucoryphus* Blan.).[1] swooped down on the *bārak* when it was in the air, got entangled in the nooses, and triumphantly bore off the whole. Improvidently, I had not provided myself with a second *bārak*, but *Ab pachtāʼe kyā hot hai jab chiṛyān chug gāʼin khet*, "What is the good of crying when the birds have eaten the field?" Abu Fazl in his queer Persian writes of the *lagaṛ* :—

"It resembles the *charg͟h*, but in size is equal to a Goshawk tiercel. Nooses are suspended from it, and birds' feathers are tied to its claws, and it is then made to fly. Birds of prey, mistaking the bunch of feathers for some quarry, attempt to snatch it away: one of them gets entangled, and becoming suspended, both birds fall to the ground." [2]

It remains to be said that the usual bait for a *lagaṛ* is a sparrow.

How do you catch sparrows? Nothing easier. Go after dark into any out-house in any village. Get a man to stand in a corner, face to the wall, with a lighted candle, and make him cover himself with a sheet Then poke about in the roof and disturb the sparrows. As they flutter out they will make for the lighted corner, where all your assistant has to do is to stoop and pick them up.

Another, perhaps even better bait, is a quail, and a quail does not die of cold. As however, hawks are attracted by movement, the quail should be tethered by *the neck*. If tethered by the legs, it will indeed flutter at first; but as the hawk approaches it, it will squat and become a clod of earth, and the hawk will then, for some reason, ignore it.

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[1] Called *kūl* in the Punjab from its wild and not unmusical note. The cry of the *gūd*, as it is called in Kashmir, is one of the familiar sounds of the Valley.

At Behal, a stage and a half from Bhakkar on the Sind-Sagar Line, I found a nest on 24th February, 1899, with two young birds able to fly well.

[2] *Āʼīn-i Akbari : Āʼīn-i bist u haftam ; daftar-i duvvam* Blochmann's translation as regards this and other hawking matters is inaccurate.

9. Chapters on Hunting Dogs and Cheetas, being an extract from the "*Kitābu'l-Bazyarah*," a treatise on Falconry, by *Ibn Kushājim*, an Arab writer of the Tenth Century.[1]

By Lieut.-Colonel D. C. Phillott and Mr. R. F. Azoo.

On Hunting Dogs.

Good dogs should be light-coloured and black-eyed, for the light-coloured endure the heat best, while the dark-coloured withstand the cold best. It is the nature of dogs to follow up foottracks, and to follow up a scent, and to welcome joyfully any one that has been kind to them: no animal is so attached to its master. The best-bred discover, on frosty days, the earths of hares,[2] since the breath of the hares thaws the frost at the entrances. The dog is a light sleeper, a keen watcher. When it sights a herd of wild asses, it selects the male, even though it knows that the male is swifter and more enduring; for it also knows that the male, after one or two spurts, loses its head and so gets overtaken. If several dogs are slipped and one seizes the quarry and the other fails, the latter does not dispute possession, but seeks another quarry; and the dog acts thus in all else it does. The points of a good dog are that it should be long between the forelegs and the hind legs; short in the back; small in the head; long in the neck; pendant-eared, with breadth between the ears; that it should have large prominent eyes; a long slender muzzle, and be deep-mouthed.[3] It should have a loud and fierce bark; a prominent and broad forehead; and there should be a few coarse hairs under the chin and on the cheeks. It should be long in the thighs and in the second thighs,[4] and short in the forelegs. The dog reaches maturity and propagates in a year. The *salūqī*[5] (which comes from the village of *Saluq* in Yemen) propagates at eight months old. The female becomes pregnant by one covering, and carries her young 61 days; and she admits the male the third day after parturition.

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[1] The author was a celebrated poet and philologer, and amongst his poems are several *ṭardiyyāt*, or poems on sport. One of his works is styled *Kitābu'l-Maṣā'id wa-l-Maṭārid* or "Snares and Quarries," which is said to be a collection of sporting anecdotes He resided in Egypt. but was a native of *Ar-Ramlah* in Palestine.

We are indebted to the courtesy of the Gotha Library for the loan of the MS. from which this extract is copied.

[2] In the East hares go to ground.

[3] *i e.*, have a "deep laughing mouth"

[4] Presumably this is the author's meaning. The word *sāq*, however, properly means the tarsus of a hawk, the shank of a man, or the cannon bone of a *fore-leg* of a horse.

[5] Colloquially *slūgi* masc. and *slūgiya* fem., the greyhound.

Al-Jāḥiẓ[1] has said that the largest number of pups at a birth is twelve, but that ordinarily not more than five to seven are produced. Occasionally only one is born, and if such be the case the pup will be better than its sire. Should one dog and one bitch be produced, the dog will be the better of the two. If three pups be born, one being a bitch resembling the mother, then the bitch pup will be the best. If several pups be produced, only one being a bitch, then that bitch will be the worst of its species.[2]

فصل في كلاب الصيد : يختار من شياتها الابيض الاسود العين
فانه أصبر على الحر والاسود أصبر على البرد * ومن طباع الكلب أنه يقتفي
الآثار ويتبع الريح والهشاشة الى من يحسن اليه وليس في الحيوان أشد
حبا لصاحبه منه و الفارة [3] منها يهتدي الى جحرة الارانب [4] في يوم الجليد
لان انفاسها تمنع الجمود على أبوابها وهو قليل النوم شديد الحرس و الكلب
اذا عاين القطيع قصد العير [5] خاصة مع علمه أنه أشد حضرا [6] وأطول شوطا
لانه يعلم منه أنه اذا عدا شوطا أو شوطين خفت بثوله [7] واذا أرسلت كلاب
فصاد أحدها وحرم الآخر لم يهارشه عليه وطلب آخر وكذلك في الاكل
يتعاطاه [8] * والمحمود منها طول ما بين اليدين والرجلين و قصر الظهر وصغر

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[1] *Al-Jāḥiẓ*, "The Prominent-eyed," died about 870 A D. He was a scientific and learned writer. He is the author of a book on animals "*Kitābu'l Ḥayawān*"

[2] In the *Uns*ᵘ *'l Malā*. an Arabic treatise on sport by *Muḥammad Ibn Mangalī An-Nāṣiri*, a writer of the 14th century, it is stated that there is a breed of hunting dogs, apparently a breed of greyhounds, styled زغارية-pl. زغاري.

[3] فارة of only slaves and animals is the equivalent of كريم in men

[4] *Vide* Note 2, Eng. Trans.

[5] In MS. الغير [6] In MS. حصرا [7] In MS بقوله.

[8] Error for في كل ما يتعاطاه.

الراس وطول العنق وعطف الاذان وبعد ما بينهما وضخامة المقلتين[1]
ونتوهما وطول الخطم مع اللطف وسعة الشدق وحمس الاباج وجهارته
ونتو الجبهة وعرضها وان يكون من تحت حنكه شعرات متفرقة غلاظ وكذلك
على خديه ويكون طويل الفخذين والساقين[2] قصير اليدين * والكلب يكمل عاما
وينزو والسلوقي وسلوق قرية باليمن ينزو لثمانية أشهر والانثى تحمل من قرعة
واحدة وحملها أحد وستون يوما وتمكن من قرعها بعد وضعها في اليوم الثالث
قال الجاحظ أكثر ما تضع ابدا[3] عشر جروا والمعتاد خمسة وستة وسبعة
وقد تضع واحدا ومتى كان ذلك كان أفره من أبيه واذا ولدت ذكرا وأنثى
فالذكر أفره وان ولدت ثلثة احدها انثى تشبه الام فهي أفره وان ولدت عدة
ذكور فيهم انثى فالانثى شر أولاد الكلاب والله أعلم بخلقه وأحكم *

ON CHEETAS.

The Cheeta is the offspring of a lioness, by a leopard[4] that coerces her, and, for this reason, cheetas are sterile like mules and all other hybrids. No animal of the same size is as weighty as the cheeta. It is the most somnolent animal on earth. The best are those that are 'hollow-bellied,'[5] roachbacked,[5] and have deep-black spots on a dark tawny[6] ground, the spots on the back being close to each other[7]; that have the eyes[8] blood-shot, small,

[1] In MS. الاقلتين . [2] *Vide* Note 4, Eng. Trans. [3] In MS. اثنى .

[4] *Namir* or *nimr*, any spotted animal; in modern Arabic applied to the tiger.

[5] *Khimāṣū-l-baṭun : akhmaṣ* is "the belly being hollow from hunger" (the opposite of *aqabb*). Might also mean "with the flanks drawn in."

[6] *Ādam* the colour of Adam or of mankind (the Arabs).

[7] *Arqash* "pepper and salt coloured," means that the dark and light spots must be close to each other.

[8] *Mu'q* مؤق pl. *āmāq*, properly the "inner corner of the eye," is often

and narrow [1]; the mouth 'deep and laughing'; broad foreheads; thick necks; the black line from the eyes long; and the fangs [2] far apart from each other. The fully mature [3] animal is more useful for sporting purposes than the cub; and the females are better at hunting than are the males, and such is the case with all beasts and birds of prey.

فصل في الفُهود

الفَهْدُ ولد اللَّبُؤَة من النَّمِرِ يَثِبُ عليها قهرًا و لهذا الفهود لا تُعْقِبُ كالبغال و كذا كل مُتَوَلِّدٍ بين جنسين و ليس شيءٌ من الحيوان في جسم الفهد الّا والفهدُ أَرْزَنُ منه - وهو أَنْوَمُ دابَّةٍ على الارض . و المحمود منها الخِماصُ البطونِ القُبُّ الظُّهورِ الأُدْمُ البياضِ الشِّداد سَوادِ النقط الرُّقْشُ المُتُون الحُمْرُ الآماق الخُزْرُ الأَحْداق الهُرْتُ الأَشداق العِراضُ الجِباهِ الغُلْبُ الرِّقاب الطِّوالُ تَخْطيطِ السَّواد من عيونها بائنةُ الأَنياب والمَسَانُّ انفعُ من الجِراءِ و اناثُ الفهود أَصْيَدُ من الذُّكور وعلى ذلك عامَّةُ الجَوارح *

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as here, used for the eye itself: so also *aḥdāq*, pl. of *ḥadaqah* the "ball of the eye."

[1] *Akhsar* is applied to the eyes of Turks and Turcomans.

[2] بائنة لانياب, meaning doubtful: can this be a copyist's error for ناتئة الانيا. "with the fangs prominent" or "long and jutting downwards"? *Nāb* (pl. *anyāb*) properly an "eye-tooth, a tusk" etc., is in modern colloquial, in the plural, applied to all the teeth of animals. In either case the article ال should be inserted.

[3] *Musinn*, pl. *masānn*, means "of advanced age" and also, as here, "mature."

10. NUMISMATIC SUPPLEMENT No. VII.

***Note.*—The numbering of the articles is continued from p. 274 of the Journal and Proceedings for 1905.**

II. MEDIÆVAL.

47. A New Mediæval Gold Coin.

Obverse and *reverse* identical श्री सिद्ध
राजः

Two specimens were found at Pandwaha in the Jhānsī District, United Provinces. They weigh 65 and 66 grains respectively. One is fairly round with a diameter of ·8″, and the other is irregularly shaped and measures ·8″ to ·9″ inches. The full inscription does not appear on either coin, but is fairly certain. In addition to the letters given above there appear to be two symbols at the end of each line, but I cannot read them as letters or figures. Similar marks occur at the end of the inscription on the coins of Gobind Chandra of Kanauj.

I would identify the king who struck these coins with Siddha Rāja Jaya Siṁha Chaulukya of Anhilvāḍa, who succeeded his father in 1093 and reigned till 1143. He was a great warrior and conquered the ruler of Mālwā (Naravarman or Yaśovarman). Some inscriptions referring to him have been published in Ind. Ant. VI, 180; X, 158; and Ep. Ind., I, 295. Much more information has, however, been derived from literary works, and is condensed in the Bombay Gazetteer, Vol. I. Early History of Gujarāt, from notes by the late Dr. Bhagvānlāl Indrajī. For present purposes the most interesting item is his contest with Madanavarman Chandel of Mahobā (1130—1164), the issue of which was doubtful. The two rulers appear to have become friendly in the end.

A peculiar feature of the coins is that they bear no representation of a deity, such as is usual on coins of the period Siddha Rāja was a Śaiva, but also had leanings towards Jainism.

R. Burn.

III. PAṬHĀNS OF DELHI, &c., &c

48. Some rare Copper Coins of the Nizām S͟hāhī or Ahmadnagar Dynasty of the Dakhan.

Burhān I.

No. 1. *Weight*, 158 grains.
Mint, Nagar.
Date, 929 A.H.

Obverse. نگر

ضرب

Reverse. شهور فے

سنــة

۹۲۹

Murtaza I.

No. 2. *Weight,* 243 grains.
Size, ·9″
Mint, Murtazanagar.
Date, 993 A.H.

Obverse. ضرب

مرتضے

نگر

Reverse. شهور فے

سنــة

۹۹۳

In spite of the absence of the names of the kings, from the date and mints on these coins, there is no hesitation in saying—until full specimens are found,—that they were issued by Burhān I. and Murtaza I., respectively.

Burhān I? or *Burhān II?*.

Nos. 3, 4 and 5. *Weight,* 146, 148 and 150 grains, respectively.
Size, ·75,″ ·7″ and ·75″, respectively.
Mint, Daulatābād.

Obverse. برهان نظام

Reverse. شهور فے

دولتا باد

From the upper halves of the obverses of each of these three Daulatābād coins, we can, with certainty, read that the name of the king is *Burhān Nizām*. The legends on the lower halves of the obverses are a great puzzle to me, and I hope that some well-experienced numismatists might throw some additional light on these coins.

As these coins are dateless, we cannot say positively whether they were issued by *Burhān Nizām II.*

All the five (5) coins I obtained some eight years ago from Sholāpur, through my kind friend Mr. Cowasjee Eduljee Kotwall of this place.

That well-known numismatist, the late Mr. C. J. Rodgers, has described and figured two copper coins (among others) No. 1 and No. 2 in his interesting article on "Rare Mughal Coins," published in Journal A S. Bengal, Part I, Vol. LXV., 1896, from Burhānābād Mint, as coins of Akbar of the year 1001 A.H. Mr. Rodgers writes : " What the mint may be I cannot conceive. Is it a capital برهان آباد ? "

The style and lettering of these coins very closely resemble those of the three Daulatābād Burhān Niẓām's coins, and assuming *Burhanābād* to have been founded by one of the two Burhān Niẓāms, could it not be possible that they may have been issued by Burhān II, a contemporary with Akbar the great in A.H. 1001 instead of by Akbar himself.

In order to have a close comparison of Burhānābād coins with the Daulatābad coins (Nos. 3, 4 & 5) the following coin No. 6 from my cabinet, will, I think, prove useful, as it is a complete coin :—

No. 6. *Weight*, 220 grains.
Size, ·85′.
Date, both in words and in figures, 1001.

Obverse.
برهان اباد
ضرب دارالسلطنت

Reverse.
و الف
احدى
فى
سنه

FRAMJEE JAMASJEE.

49. THE BAHMANĪ KINGS.

Dr. Codrington has given a valuable summary of what is known regarding the numismatic history of the Bahmanī dynasty in an article published in the Numismatic Chronicle for 1898 (p. 259). A more recent study by Major Haig, entitled *Some Notes on the Bahmanī Dynasty*, which appeared in our Journal for 1904 (extra number, p. 1.) is chiefly concerned with the genealogy of the line. A few additions can be made to Dr. Codrington's list, and some conclusions of Major Haig's confirmed, from a find of coins which was recently discovered in a village called Bedidhana, in the Betūl District, Central Provinces.

The coins, which are all of copper, and numbers 869, may be roughly classified as follows:—Fīroz S̱ẖāh (22), Aḥmad S̱ẖāh I. (29), Aḥmad S̱ẖāh III (363), Humāyūn S̱ẖāh (36), Niẓām S̱ẖāh (26), Muḥammad S̱ẖāh (375), and Maḥmūd S̱ẖāh (13). The remaining five were illegible. Almost all the coins were in excellent condition, neither worn nor corroded. A complete description has been recorded in MS. as Report

No. 21 B. of 1906, from which the following notes are extracted as they refer to novelties. In quoting Dr. Codrington's paper, the initial O.C., with the page of the Numismatic Chronicle and the numbers of the coin-type there quoted, will be used. The British Museum Catalogue, Muhammadan States, is referred to as B.M.C.

FĪROZ SHĀH, 8th KING.

The type B.M C No. 453 is represented by 22 specimens. The B.M.C. notes that the reverse has traces of a marginal inscription. O.C. No. 1, p. 266, does not refer to this. One of the coins now found reads... احد عشر and the other... خمس عشر It is uncertain whether these dates should be read as (8)11 and (8)15 or as (8)21 and (8)25.

AḤMAD SHĀH I, 9th KING.

(*a*) The parentage of this king is discussed by Major Haig (p. 8), who refers to a copper coin bearing the inscription 'Aḥmad Shah bin Aḥmad Shāh bin Bahman Shāh.' Unfortunately that coin is not dated, and the *Kunya* (not quoted) is said to differ from that on coins which can certainly be attributed to Ahmad Shāh I. Dr. Codrington publishes a coin with the following inscription:—

المستدبق	سلطان
بالله الديان	احمد شاه بن احمد
المنان الغنى	بن الحسن البهمنى
	٨٣٨

He ascribes it to Aḥmad Shāh II, but gives no grounds for this assumption (No. 1, p. 267). A coin in the find now being described bears exactly the same inscription, but is dated (8) 33. The new date is fairly conclusive that both these coins should be assigned to Aḥmad Shāh I, while other evidence confirms this ascription. In the first place, the coins are of what is known as the first size (weight about 245 grains), but their inscription differs completely from that of the coins of this size, which can positively be assigned to Aḥmad Shāh II (O.C. No. 2, p. 268; B.M.C. No. 461), and I cannot trace another example of such a variation in the Bahmanī coins of a given standard during the reign of a single king. Secondly, Major Haig pointed out that the ascription of his coin to Aḥmad Shāh I. was rendered doubtful by the fact that this king was apparently the son of Aḥmad Khān. The latter never ascended the throne, and it was improbable that he would be described as 'Shāh' on his son's coin. The two coins, which I now propose to assign to Aḥmad Shāh I, purport to be of Aḥmad Shāh, son of Aḥmad, the father's name having no title, either of Shāh or Khān, affixed to it. Dr. Codrington's coin seems to have no room for such a title, and the specimen now described has even less, though it is not so valuable for this purpose as the other is. I have some doubt whether the last line of the reverse should read بن الحسن البهمنى or ابو الحسن البهمنى Dr. Codrington's remark that this type is common is hardly borne out by the Betūl find, which had only one specimen.

(*b*) In describing another type of the copper coinage of Aḥmad Shāh I (O.C. No. 1, p. 267; B.M.C. No. 454), Dr. Codrington refers to two doubtful matters. His reading of the third line of the obverse as الملك المنان is confirmed by some of the specimens now found. The words on the top of the reverse are also now read with certainty as بحضرت, the coin being held upside down for this purpose. To the dates read by Dr. Codrington (836—8) may be added 832. I also read 827 on one coin of this type, but the mint is not legible.

AḤMAD SHĀH II, 10th KING.

(*a*) A single coin like O.C. No. 2, p. 268 (B.M.C. No. 461) confirms the reading of متوكل for the top line of the obverse, but is not absolutely free from doubt.

(*b*) To the dates given by Dr. Codrington for B.M.C. No. 462 (O.C. No. 4, p. 268) may be added 842, 845, 848, 850, 852—3, 859 and 860.

(*c*) Neither by Dr. Codrington (O.C. No. 3, No. 268), nor in the B.M.C. is it noted that No. 467 in the latter has a marginal inscription on the obverse. This is not complete on any one of the 76 coins of this type now found, but it certainly includes ضرب بحضرت محمد اباد. Two words remain, the first of which is probably خجسته, the second being quite uncertain. New dates for this type are 850—2, 856 and 860.

(*d*) To the dates given by Dr. Codrington (No. 5, p. 268) for the type B.M.C. No. 470 can be added 83 and 853.

HUMĀYŪN SHĀH.

(*a*) Dr. Codrington describes a new type of Humāyūn's coins in No. 2, p. 269. He has not been able to complete the reading of the obverse, and describes the reverse as similar to that on B.M.C. No. 472. Ten coins in the Betūl find give the following reading :—

همايونشاه	المتوكل
بن احمد شاه	علي كرم الله
الولي البهمنى	المنان الغنى

(*b*) I first read the coin described below as a new type of Humāyūn Shāh (4th size).

بالله	……………
المعتصم	همايونشاه
ابو المظفر	السلطان
	٨٦٥

The unit figure is, however, doubtful (possibly 9), and there is almost certainly a line above the name, so that the coin is probably one of Niẓām Shāh or Muḥammad Shāh.

NIZĀM SHĀH, 12th KING.

(*a*) Dr. Codrington gives only the date 866 for his type No. 3, p. 269. To this can be added 867 (reversed on the coin—768).

MUḤAMMAD SHĀH, 13th KING.

To the dates given by Dr. Codrington for the type B.M C. No. 474, can be added 869, 884 and 886 in the first size, 873 in the 2nd size, 807 (? 870) and 882 in the 3rd size.

Specimens of all the varieties referred to in this note will be acquired for the Indian Museum.

R. BURN.

IV. MUGHALS.

50. MUGHAL MINT TOWNS.

Toragal.

In Part 1 of the Journal, Vol. LXXIII (1904), Numismatic Supplement, pp. 240-241, Mr. H. N. Wright identifies a mint town of Aurangzeb, Kām Bakhsh, and Farrukhsiyar, as Nūrkal or Nūrgal, "the chief town of a *sarkār* in the province of Bijapur." He relies on entries upon pp. lxxxix., xci., and 154 of Mr. Jadunath Sarkār's "India of Aurangzeb." It is hardly necessary, perhaps, to point out that Mr. Sarkar was working from Persian manuscripts only; and that the correct decipherment from them of personal and place names is exceedingly difficult, and the result in obscure cases is nearly always open to question. The manuscripts of the *Chahār Gulshan*, the work which Mr. Sarkār was using, are more than usually corrupt and indecipherable. Thus no great reliance can be placed on the reading *Nūrgal* until verified by independent evidence. So far this identification on paper has not been followed by any attempt to locate the town upon the map. This farther stage, I think, I can now supply, coupled with an emendation of the reading by substituting ***Toragal*** for *Nūrgal*.

In the *Ma,āṣir-ul-umarā*, I, 288, line 11 (biography of Amānat Khān No. 2), there is the following passage: "When in the end of year 33" [First Ramazān 1100 to 30 Sha'bān 1101 H., June 20th, 1689 to June 7th, 1690] "the victory-bearing standards were "set in motion from Qaṣbah Badari, seventeen *kos* to the north 'of Bījāpur, the victorious tents were erected in the vicinity of 'Kalkalah in the division of Toragal [*variant*, Nūrgal], which 'is situated to the south of Bījāpur, at a distance of twelve '*kos* and on the banks of the river Kishna, the said Khān...... '......"

This Kalkalah is evidently identical with the Galgalī of Sheet No. 41 of the Indian Atlas, a place on the right bank of the Kishna (or Kistna) river, and in the present Bījāpur district. It was more than once the site of 'Ālamgīr's camp, and, on one occasion, he remained there for more than four years—See the *Ma,āṣir-i-'Ālamgīrī'* pp. 335 (arrival in year 33), 338 (departure for Bījāpur for fourth time in year 34), 345 (leaves Bījāpur for Galgalī in year 35), 370 (departure for Bījāpur for fifth time in year 39). It was at Galgalī that the Neapolitan traveller, Gemelli Careri, paid his visit to the emperor's camp.

If Kalkalah (Galgali) in the S.-W. corner of the Bījāpur district was within the division of Toragal (Nūragal), it follows that the latter place cannot be very distant. Turning to the maps in Vol. XXIII (Bījāpur) and Vol. XXI (Belgaum) of the "Bombay Gazetteer," we find on the south-western boundary of the one and the eastern boundary of the other a name "Toragal," having Mudhol on the north and Ramdurg on the south of it. These are the names of two southern Mahrattah native states, and an account of them will be found in Vol. I, Part II, of the "Bombay Gazetteer."

Referring next to Sheet No. 41 of the Indian Atlas, we find in the Rāmdurg state a town Toragal on the Malprabha river, an affluent of the Kishna. It is situated in 75°17′ long. 15°57′ lat. (approximately), and about 36 miles as the crow flies to the south of Galgalī The delineation on the maps shows it to have been an extensive place, and, apparently, it was at one time fortified. It is a town of considerable antiquity, the head of the Toragal "six-thousand" [villages ?] in the Kalyānī kingdom of the Western Chālukyās, and is mentioned in 1187 and 1222 A.D. ("Bo. Gaz." I, Part 2, pp. 431, 465, 523).

I submit that this Toragal is the Mughal mint town we are in search of, and that the reading of *Nūrgal* should be abandoned for that of *Toragal*. As the Mughals did not occupy the Bījāpur kingdom until 1097 H (1686), in the 30th year of Aurangzeb, none of their coins can have been issued at Toragal before that year.

WM. IRVINE

51. SOME DATES RELATING TO THE MUGHAL EMPERORS OF INDIA.

The following two Lists embody the results of a recent endeavour to ascertain, as accurately as may be, all dates that go to determine the periods, during which coins were issued by the several Mughal Emperors of India or by the Claimants to the Imperial throne. The lists hitherto published are not only extremely meagre but inconsistent in at least some of their details, and hence one feels a natural hesitation in accepting any of the figures they contain. In preparing the List A now submitted, I have consulted various authorities, which, in order to facilitate verification, have, in every case, been duly recorded. The dates entered are given first according to Hijrī reckoning, but, with the aid of Sir A. Cunningham's well-known "Tables," they have all been converted into the corresponding dates of the Christian era.

In List B will be found, opposite the name of each Mughal Emperor or Claimant, the period during which he may be held to have caused coins to be struck, and next, on separate lines, are given the dates of the earliest, and of the latest, known specimens in gold or silver or copper, of each reign. In order to discover in every case which were the earliest and which the latest coins known, I laid under contribution the published catalogues of the British, the Indian (Calcutta), and the Lāhor Museums, but for the purposes of my search quite the most valuable material consisted of certain MS. "returns" kindly supplied me by the following gentlemen, to all of whom I desire to tender hearty thanks:—Messrs. G. B. Bleazby, R. Burn, Framji J. Thanawala, L. White King, and H. Nelson Wright.

[Abbreviation :—

E.D. = Elliot's "History of India as told by its own Historians," edited by Dowson, 8 vols.

Ersk. = Erskine's "History of India under Baber and Humayun," 2 vols.

Beale = Beale's "Oriental Biographical Dictionary," revised by Keene.

A.A. = "Ain-i-Akbari," translated by Blochmann and Jarrett, 3 vols.

When three separate figures are employed to express a date, the first represents the day, the second the month, and the third the year; thus :—

29 : X : 1627 A.D. = 29th of October, 1627 A.D.;
26 : VIII : 1076 A.H. = 26th of Rajab, 1076 A.H.].

List A.

1 **Bābar** :

Accession, 15 : VIII : 932 A.H., Fri., 27 : IV : 1526 A.D.;
Death, 5 : V : 937 A.H., Sun., 25 : XII : 1530 A.D.
See Ersk. I : 437, 517; E.D. IV. 257; V. 118.

2. **Humāyūn : (*a*) First Reign :**

Accession, 9 : V : 937 A.H., Thur., 29 : XII : 1530 A.D.;
Defeat, 10 : I : 947 A.H., Mon., 17 : V : 1540 A.D.
See E.D. V : 118; Ersk. II : 187.

(*b*) Second Reign :

Victory, 4 : IX : 962 A.H., Tues., 23 : VII : 1555 A.D.;
Death, 15 : III : 963 A.H., Tues., 28 : I : 1556 A.D.
See Ersk. II. 520; E.D. V. 240.

3. **Akbar I** :

Accession, 2 : IV : 963 A.H., Fri., 14 : II : 1556 A.D.;
Death, 12 : VI : 1014 A.H., Tues., 15 : X : 1605 A.D.
See E.D. V. 241, 247 ; VI. 115.

4. **Jahāngīr** :

Accession, 20 : VI : 1014 A.H., Wed., 23 : X : 1605 A.D.;
Death, 28 : II : 1037 A.H., Mon., 29 : X : 1627 A.D.
See E.D. VI. 284, with correction in A.A. I. 212, 213 ; E.D. VI. 435.

Dāwar Bakhsh :

Accession, circa 28 : II : 1037 A.H., Mon., 29 : X : 1627 A.D.;
Deposition, 2 : V : 1037 A.H., Sun., 30 : XII : 1627 A.D.;
Death, 26 : V : 1037 A.H., Wed., 23 : I : 1628 A.D.
See E.D. VI. 435, 436, 438 and note 2.

5. **Shāh Jahān I** :

Accession, 18 : VI : 1037 A.H., Thur., 14 : II : 1628 A.D.;
Deposition, 17 : IX : 1068 A.H., Tues., 8 : VI : 1658 A.D.;
Death, 26 : VII : 1076 A.H., Mon., 22 : I : 1666 A.D.
Coins continued to be struck in the name of Shāh Jahān I till 4 : IX : 1069 A.H., Mon., 16 : V : 1659 A.D.
See E.D. VII. 6, 226, 229, 241, 275.

Shujā' :

Rebelled early in 1068 A.H., which year began on Tues., 29 : IX : 1657 A.D.;
Defeated, circa 1 : IX : 1070 A.H., Tues., 1 : V : 1660 A.D.;
Died in 1071 A.H., which year lasted from 27 : VIII : 1660 till 16 : VIII : 1661 A.D.
See E.D. VII. 213, 214, 241, 253, 254 ; Beale, 392.

Murād Bakhsh :

Rebelled early in 1068 A.H., which year began on Tues. 29 : IX : 1657 A.D.;
Arrested, 4 : X : 1068 A.H., Fri., 25 : VI : 1658 A.D.;
Died, 21 : IV : 1072 A.H., Wed., 4 : XII : 1661 A.D.
See E.D. VII. 132, 213, 214, 229.

6. **Aurangzeb 'Ālamgīr I** :

Accession, 1 : XI : 1068 A.H., Wed., 21 : VII : 1658 A.D.;
Death, 28 : XI : 1118 A.H., Thur., 20 : II : 1707 A.D.
Aurangzeb deferred the issuing of coins struck in his own name till 4 : IX : 1069 A.H., Mon., 16 : V : 1659 A.D.
See E.D. VII. 229, 241, 386.

A'ẓam S͟hāh:

Accession, 10: XII: 1118 A.H., Tues., 4: III: 1707 A.D.;
Defeat and death, 18: III: 1119 A. H., Sun., 8: VI: 1707 A.D
See E.D. VII. 387, 391, 398—400.

Kām Bak͟hs͟h:

Assumed imperial power soon after the death of Aurangzeb, q.v.;
Defeated and killed, circa 1: XI: 1119 A.H., Tues., 13: I: 1708 A. D.
See E.D. VII. 389, 390, 406—408.

7. S͟hāh 'Ālam I., Bahādur:

Accession, 30: I: 1119 A.H., Tues., 22: IV: 1707 A.D.
Death, 21: I: 1124 A.H., Mon., 18: II: 1712 A.D.
See E.D. VII. 392, 556.

8. Jahāndār:

Accession, 14: III: 1124 A.H., Thur., 10. IV: 1712 A.D.;
Deposition, 16: XII: 1124 A.H., Sat., 3: I: 1713 A.D.;
Death, 17: I: 1125 A.H.. Mon., 2: II: 1713 A.D
See E.D. VII. 437, 438, 445; Beale 190.

9. Farruk͟h-siyar:

Accession, 23: XII: 1124 A.H., Sat., 10: I: 1713 A D.;
Deposition, 8: IV: 1131 A.H., Tues., 17: II: 1719 A.D.
Death, 9: VII: 1131 A.H, Sun., 17: V: 1719 A D.
Farruk͟h-siyar antedated his reign from 1: III: 1124 A.H., Fri., 28: III: 1712 A D.
See Beale, 130, 131; E.D. VII. 446.

10. Rafī 'al darajāt:

Accession, 9: IV: 1131 A.H., Wed., 18: II: 1719 A.D.:
Death, 23: VII: 1131 A.H., Sun., 31: V: 1719 A.D.
See E.D. VII. 479, 482.

11. S͟hāh Jahān II. (Rafī'al daulat):

Accession, 20: VII: 1131 A H.. Thur., 28: V: 1719 A.D.;
Death, 22: X: 1131 A.H., Thur., 27: VIII: 1719 A.D.
See E.D. VII. 482, 485.

Nikū-siyar:

Accession, 9: VI: 1131 A.H., Sat., 18: IV: 1719 A.D.;
Deposition, 27: IX: 1131 A.H., Sun., 2: VIII: 1719 A.D.;
Death, ?
Grave doubt attaches to the attribution to Nikū-siyar of the coins commonly assigned to him.*
See E.D. VII. 482, 484.

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* See W. Irvine, *Couplet on Coins of Muhammad Shah*, Proceedings, A.S.B., April 1899.—R B.

Ibrāhīm :

Accession, 9 : XII : 1132 A.H., Sat., I : X : 1720 A.D. ;
Defeat, 18 : I : 1133 A.H., Tues., 8 : XI : 1720 A.D.
See E.D. VII. 509, 512, 515.

12. **Muḥammad :**

Accession, 15 : XI : 1131 A.H., Fri., 18 : IX : 1719 A.D. ;
Death, 27 : IV : 1161 A.H., Fri., 15 : IV : 1748 A.D.
See E.D. VII. 485 ; VIII. 111.

13. **Aḥmad S͟hāh Bahādur :**

Accession, 2 : V : 1161 A.H., Tues., 10 : IV : 1748 A.D.;
Deposition, 11 : VIII : 1167 A.H., Mon., 3 : VI : 1754 A.D. ;
Death, 28 : X : 1188 A.H., Sun., 1 : I : 1775 A.D.
See E.D. VIII. 141 ; Beale, 42.

14. **'Ālamgīr II :**

Accession. 11 : VIII : 1167 A.H., Mon., 3 : VI : 1754 A.D. ;
Death, 20 : IV : 1173 A.H., Tues., 11 : XII : 1759 A.D.
See E.D. VIII. 141, 243.

S͟hāh Jahān III :

Accession, 20 : IV : 1173 A.H., Tues., 11 : XII : 1759 A.D. ;
Deposition, 29 : II : 1174 A.H., Fri., 10 : X : 1760 A.D.
Death, ?
See E.D. VIII. 243, 278.

15. **S͟hāh 'Ālam II :**

Accession, 5 : V : 1173 A.H., Tues., 25 : XII : 1759 A.D. ;
Death, 7 : IX : 1221 A.H., Tues., 18 : XI : 1806 A.D.
See E.D. VIII. 172 ; Beale, 361.

Bīdār Bak͟ht :

Accession, 27 : XI : 1202 A.H., Fri., 29 : VIII, 1788 A.D.
Flight, 8 : I : 1203 A.H., Thur., 9 : X : 1788 A.D.
Death, ?
See Beale, 106.

16. **Akbar II :**

Accession, 7 : IX : 1221 A.H., Tues., 18 : XI : 1806 A.D.
Death, 28 : VI : 1253 A.H., Fri., 29 : IX : 1837 A.D.
See Beale, 46.

17. **Bahādur S͟hāh II :**

[We here retain the commonly accepted designation of this sovereign. Before his time, however, three of the Emperors, Aurangzeb, S͟hāh 'Ālam I, and Aḥmad S͟hāh, had all, as evidenced by their coins, borne the name of Bahādur.]

Accession, 23 : VI : 1253 A.H., Fri., 29 : IX : 1837 A.D. ;
Deposition, 13 : VIII : 1274 A.H., Mon., 29 : III : 1858 A.D.

Death, 14: V: 1279 A.H., Fri., 7: XI: 1862 A.D.
See Beale, 95; Holmes' "History of the Indian Mutiny," p. 387.

LIST B.

1. Bābar: 932—937 A.H.; 1526—1530 A.D.
Earliest known: G.—; S. 933; C. 936.
Latest known: G—; S. 938 (Lahor); C. 937.

2. Humāyūn: First Reign: 937—947 A.H.; 1530—1540 A.D.
Earliest: G.—; S. 937 C. 937.
Latest: G.—; S. 946; C. 947 (Bleazby).
Second Reign: 962—963 A.H.; 1555—1556 A.D.
Earliest: G.—; S. 960 (Bleazby); C.—.
Latest: G.—; S. 962; C.—.

3. Akbar I: 963—1014 A.H.; 1556—1605 A.D.
Earliest Hijri: G. 963; S. 963; C. 962 (Lāhor).
Latest Hijri: G. 1000; S. 1008 (King); C. 1006 (Taylor).
Earliest Ilāhi: G. 32; S 30; C. 31
Latest Ilāhi: G. 51 (British); S. 50; C. 50.

4. Jahāngīr: 1014—1037 A.H.; 1605—1627 A.D.
Earliest: G. 1014; S. 1014; C. 1014.
Latest: G. 1037; 1037; C. 1034.
Dāwar Bakhsh: [28: II—2: V] 1037 A.H.; [29: X—30: XII] 1627 A.D.
Earliest: G.—; S. 1037; C.—.
Latest: G.—; S. 1037; C.—

5. Shāh Jahān I: 1037—1069 A.H.; 1628—1659 A.D.
Earliest: G. 1037; S. 1037; C. 1037.
Latest: G. 1069; S. 1069; C. 29 Julūs.

Shujā': 1068—1070 A.H.; 1657—1660 A.D.
Earliest: G.—; S. 1068; C.—.
Latest: G.—; S 1068; C.—.

Murād Bakhsh: circa [1: I—4: X] 1068 A.H.; 1657—1658 A.D.
Earliest; G. 1068; S 1068; C. 1 Julūs.
Latest: G. 1068; S. 1068; C. 1. Julūs.

6. Aurangzeb 'Alamgir I: 1069—1118 A.H.; 1659—1707 A.D.
Earliest: G. 1072; S. 1068; C. 1068.
Latest: G. 1118; S. 1119 (British); C. 1119 (Taylor).

A'zam Shāh: 1118—1119 A.H.; [4: III—8: VI.] 1707 A.D.
Earliest: G. 1118; S. 1119; C.—.
Latest: G. 1119; S. 1119; C.—.

Kām Bakhsh : 1118—1119 A.H. ; 1707—1708 A.D.
Earliest : G. 1120 (British); S. 1119 ; C.—.
Latest : G. 1120 (British); S. 1120 (British); C.—.

7. Shāh 'Ālam I., Bahādur : 1119—1124 A.H. ; 1707—1712 A.D.
Earliest : G. 1119 ; S. 1119 ; C. 1122.
Latest : G. 1123 ; S. 1124 ; C. 1124.

8. Jahāndār : [14 : III.—16 : XII.] 1124 A.H. ; 1712—1713 A.D.
Earliest : G 1124 ; S. 1124 ; C. 1124.
Latest : G. 1124 ; S. 1124 ; C. 1124.

9. Farrukh-siyar : 1124—1131 A.H. ; 1713—1719 A.D.
Earliest : G. 1124 ; S. 1124 ; C. 1125.
Latest : G. 1131 ; S. 1131 ; C. 1128.

10. Rafi' al darajāt : [9 : IV.—23 : VII.] 1131 A.H. ; [18 : II—31 : V.] 1719 A.D.
Earliest : G. 1131 ; S. 1131 ; C.—.
Latest : G. 1131 ; S. 1131 ; C.—.

11. Shāh Jahān II (Rafi' al daulat): [20 : VII—22 : X.] 1131 A.H. ; [28 : V.—27 : VIII.] 1719 A.D.
Earliest : G. 1131 ; S. 1131 ; C.—.
Latest : G. 1131 ; S. 1131 ; C.—.

Nikū-siyar : [9 : VI—27 : IX.] 1131 A.H. ; [18 : IV.—2 : VIII.] 1719 A.D.
Earliest : G. 1 Julūs ; S. 1131 ; C.—.
Latest : G. 1 Julūs ; S. 1132 ; C.—.

Ibrāhīm : 1132—1133 A.H. ; [1 : X.—8 X.] 1720 A.D.
Earliest : G. 1132 ; S. 11 3 ; C.—.
Latest : G. 1132 ; S. 1133 ; C.—.

12. Muḥammad : 1131—1161 A.H. ; 1719—1748 A.D.
Earliest : G. 1131 ; S. 1131 ; C. 1132.
Latest : G. 31 Julūs ; S. 1161 ; C. 1150.

13. Aḥmad Shāh Bahādur : 1161—1167 A.H. ; 1748—1754 A.D.
Earliest : G. 1161 ; S. 1161 ; C. 1161.
Latest : G. 1167 ; S. 1167 ; C. 1161.

14. 'Ālamgīr II : 1167—1173 A. H. ; 1754—1759 A.D.
Earliest : G. 1 Julūs ; S. 1167 ; C. 1 Julūs.
Latest : G. 1171 ; S. 1180 (Taylor) ; C. 1172.

Shāh Jahān III : 1173—1174 A.H. ; 1759—1760 A.D.
Earliest : G. 1173 ; S. 1173 ; C.—.
Latest : G. 1174 ; S. 118 x. (Taylor); C.—.

15. Shāh 'Ālam II: 1173—1221 A.H.; 1759—1806 A.D.
Earliest: G. 1174; S. 1174; C. 1175.
Latest: G. 1221; S. 1225 (British); C. 1219.

Bīdār Bakht: 1202—1203 A.H.; [29: VIII—9: X.] 1788 A.D.
Earliest: G. 1202; S. 1202; C.—.
Latest: G. 1203; S. 1202; C.—.

16. Akbar II; 1221—1253 A.H.; 1806—1837 A.D.
Earliest: G. 1221; S. 1221; C. 1221.
Latest: G. 19 Julūs; S. 36 Julūs; C. 1251.

17. Bahādur Shāh II: 1253—1274 A. H.; 1837—1858 A.D.
Earliest; G. 1273; S. 1254; C. 1263.
Latest: G. 1273; S. 1274; C. 1265.

GEO. P. TAYLOR.

52. SHĀH JAHĀN III.

A find of 26 silver coins from Muḥammadpur, *thāna* Mahārānī, District Sāran, consisted of coins of the 'Aẓīmābād mint of Muḥammad Shāh, Aḥmad Shāh, 'Ālamgīr II, and Shāh Jahān III. The coin of the last-mentioned is unpublished and bears the following inscription:—

Obverse	*Reverse*
شاه جهان	(عظیـ)م (اباد)
بادشاه غازے	ضرب
سکه (مبارک) ۷۳ (۱۱)	میمنت مانوس
	جلوس احد (trefoil)
	سنه

R. BURN.

V. MISCELLANEOUS.

53. COINS OF 'ALĀ-UD-DĪN OF KHWĀRIZM.

At p. 484 of the Journal of the Royal Asiatic Society for 1900, Mr. H. Nelson Wright published a coin of 'Alā-ud-dīn of Khwārizm. He pointed out that the word عدل appeared on the body of the bull, and suggested that Mr. C. J. Rodgers was wrong in reading غذه on coins Nos. 36—40, Punjab Catalogue, Part II, p. 73—74. The reading on the coin figured by Mr. Wright is clearly عدل , but some coins in my collection bear letters which are certainly not عدل and may, perhaps, be read as معذه.

The first three letters are certain and the final ه is also clear though the letter preceding it, if it is meant for ن, is amalgamated with ذ.

R. BURN.

54. A COIN OF 'ALĀ-UD-DĪN OF KHWĀRIZM.

Early in 1905, a friend in Bangalore who went to Kābul on a commercial mission, brought me back a good many coins of various kinds. Among them was a gold coin which I could not read. I showed it to one or two friends who were equally puzzled, but, on sending it to Dr. O. Codrington, he identified it and returned it with the following note:—

"Your coin is one of the Khwārizmi Shāh 'Alā-ud-dīn Muḥammad bin Takash (A.H. 596—617); mint Tirmiḍh; un dated. It is similar, I think, to No. 49 of Hoernle's "Central Asiatic Coins" published in J.A.S.B. for 1889, and to No. 9358 of Rodgers' Catalogue of the Coins of the Indian Museum, Part I, p. 22.

The word on top of the reverse is read by both Hoernle and Rodgers doubtfully as فنک or قنک but on your coin I read without much doubt ترمز *i.e.* Tirmiḍh or Termez. This place is in Bukhara 38° 17′ N. and 67° 38′ E., and was a mint town from the time of the Abbasid Khalifs to that of the Tīmūrids, but this is the first time that I have seen the name on a Khwārizm Shāh coin.

'Alā-ud-dīn Muḥammad extended the great dominions of his father Takash by subduing Bukhārā, Samarkand, Oran and Afghanistan: it is quite reasonable, therefore, that he should have Termez as one of his mint towns."

It will be seen that the coin in the I.M. Catalogue weighs only 47·81 grains instead of 71 grains as mine does: the dimensions of the former are not given in the Catalogue, but my coin measures ·9 of an inch.

J. A. BOURDILLON.

11. The Paladins of the Kesar-saga. A collection of Sagas from Lower Ladakh. Tale No. II.

By Rev. A. H. Francke.

THE TALE OF SKYABA RGODPO.

Abstract of Contents.

Agu *Skyaba rgodpo* of *gLing* went a-hunting and met with he great king of *Groyul*. They became friends and arranged that their children were to marry each other. Both their wives were with child, and, one day, when *Skyaba rgodpo* found a golden bow and arrow, and the king of *Groyul* a mother-o-pearl spindle, hey knew that the former was to get a baby-boy, and the latter a baby-girl. They agreed that the names of their children were to be *Gromo so dkar* (black brown with white teeth) for the girl, and *Skyaba dkarpo* (white ladle) for the boy. Then they played at dice for seven days about their children, to find out who of the two was to become the master of the house.[1] The result was that *Skyaba rgodpo's* boy was to be master, and that the girl was to accept him, even if he should be very poor. Then the whole contract was written by *Skyaba rgodpo* with his own blood and hidden beneath his saddle. On his way home, *Skyaba rgodpo* was wallowed by a wild yak, and the horse arrived in the stable alone.

When *Skyaba rgodpo's* boy was born and grown up, he decided to leave his home and go to find his father. He saddled his horse and discovered the marriage contract. From a high hill he aw a yak grazing and asked him what kind of food he liked best. The yak replied that he liked the flesh of men and animals best of all, and that he would not eat grass unless he could not get he former. Next morning the boy killed the yak with seven arrows and opened his belly. Out of it came a number of men whom the yak had devoured, and also the boy's father. The atter, however, died soon. His corpse was burnt over three rrows and deposited in a *spur khang* (corpse house).

Then the boy decided to go to gain his bride from *Groyul*. n a counsel with king Kesar, the following Agus received orders o accompany the boy, *dPalle rgodpo*, *khrai mgo khrai thung*, *Angar ltsangspa*; [*Mi yulla medpai*] *Grodpa che*; *Lag lag rings*; *kang rkang rings*. Before arriving in *Groyul*, they came to a reat lake. Agu *dPalle* made a great dumpling of one bushel of lour and sat down on a boulder to eat it. Then a beautiful girl

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[1] The question is whether the boy is to be a *bagpo* who provides a wife or himself, or a *magpa* who is asked by the girl, whilst she remains master in her father's house.

11. The Paladins of the Kesar-saga. A collection of Sagas from Lower Ladakh. Tale No. II.

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When *Skyaba rgodpo's* boy was born and grown up, he decided to leave his home and go to find his father. He saddled his horse and discovered the marriage contract. From a high hill he saw a yak grazing and asked him what kind of food he liked best. The yak replied that he liked the flesh of men and animals best of all, and that he would not eat grass unless he could not get the former. Next morning the boy killed the yak with seven arrows and opened his belly. Out of it came a number of men whom the yak had devoured, and also the boy's father. The latter, however, died soon. His corpse was burnt over three arrows and deposited in a *spur khang* (corpse house).

Then the boy decided to go to gain his bride from *Groyul*. In a counsel with king Kesar, the following Agus received orders to accompany the boy, *dPalle rgodpo*, *khrai mgo khrai thung*, *Anggar ltsangspa*; [*Mi yulla medpai*] *Grodpa che*; *Lag lag rings*; *rkang rkang rings*. Before arriving in *Groyul*, they came to a great lake. Agu *dPalle* made a great dumpling of one bushel of flour and sat down on a boulder to eat it. Then a beautiful girl with a golden water-pot appeared on the opposite shore, and Agu *dPalle* asked her where the castle of the king of *Groyul* was, and whether the expected daughter had been born to him or not. The girl asked in return what he wanted to do with the king and his daughter and advised him to fly across the water or to swim through it. *dPalle* went wading through it, but a short distance before reaching the shore, he pretended to be carried away by the current, and the girl ran to his assistance. She said that she was the daughter of the king of *Groyul*, but that she was not willing to show the way to the castle, as she was afraid he would revenge himself on her (for having been unkind to him). *dPalle* spent the night in the house of two field labourers, and when all the Agus had arrived, he went with them before the king of *Groyul*, and demanded his daughter as bride for *Skyaba ryodpo.* The king said that he would give her to him who was able to point her out, when she was in the company of one hundred other girls. Agu *dPalle* was able to do that, for *Ane bkur dmanmo*, the Queen of Heaven, who had taken the shape of a golden fly, descended on the forehead of the king's daughter, thus showing whom he must point out. The king of *Groyul*, however, was not yet ready to part with his daughter, and said, he would give her to him who could eat one hundred carcasses at a sit down. This feat was performed by Agu *Grodpa che* (great stomach) who even ate the bones of the animals. Then the king said, he would give his daughter to him who was able to carry one hundred jugs of water from the sea to the castle within a day. This was done by the Agus *Lag lag rings* (Long hand) and *rkang rkang rings* (Long leg). Then there was still a delay; for the wedding was postponed, until the uncle of the bride had arrived and the Nyopas [1] were brought together. The uncle arrived after thirty days and the Nyopas spent seven days with singing the Ritual and three days with singing the Drinking Song.[2]

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[1] The question is whether the boy is to be a *baggo* who provides a wife for himself, or a *magpa* who is asked by the girl, whilst she remains master in her father's house.

Before the Agus started with the bride, Agu *dPalle*, in a song, demanded the bridal presents which were presented. Also the treasures of the castle followed after the bride, but a portion of them was returned to her relations. In the desert, Agu *dPalle* provided the party with water, which he dug out of a moist spot. Agu *khrai myo khrai thung* was sent in advance, to prepare the people of *gLing* for the event. They came with many Nyopas to meet the bride. Then there was a second wedding feast, and the country remained in a happy state.

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[1] Nyopas are the honorary buyers of the bride: see 'A Lower Ladakhi Marriage Ritual,' *Indian Antiquary*, 1901.

[2] See 'The Drinking Songs of Khalatse,' Tibetan Text, printed at Leh, 1901.

VOCABULARY AND NOTES.

ཁྲོ་པ། *khropa,* the same as *khrodpa*, comrade.

ད་མ། *dama*, a ball of woollen thread.

གྲོ་མོ། *gromo*, not only 'reddish grey,' but also 'dark brown.'

སོ་གར། *sogar*, the same as *so dkar*, white teeth.

སྐྱ་བ་དཀར་པོ། *skyaba dkarpo*, 'white Ladle'; name of *Skyaba rgodpo's* son.

ཟེད། *zed*, the same as *zaed* or *zaad*, eat, present tense.

མི་ཡུལ་ལ་མེད་པའི་གྲོད་པ་ཆེ། *mi yulla medpai grod pa che*, 'Big stomach, as there is none in the land of men.' The name of an Agu who as well as several others reminds us of such tales as 'Sechse kommen durch die ganze Welt.'

ཆུ་དཀར། *chu dkar*, or *chu*, *kar*, water jug.

མཐའ་མས། *mthāmas* by the use of the instrumental case, the word 'along' is expressed; 'along the shore.'

ཆུན་པ། *chunpa*, labourers who irrigate the fields.

དཔལ་བ། *dpalba*, forehead.

ཝ་ལེན། *walen*, forming a chain to transport water quickly, as in the case of a conflagration.

རྡེ་ཡངས། *rde yangs* or *sde yangs*, a heap of clothes which are given to a bride as a wedding present.

རྫ། *rdza*, occurs here in the sense of 'heap.'

ཁ་དག། *kha tag*, a piece of white linen which is worn on the hat at the occasion of a wedding.

ཡ་ཅགས། *ya cags* (or perhaps *γyā lcags*), brass vessels.

ཤེར། *shar*, a moist spot on the ground.

ང་ཞ། ང་དང། *nga zha*, *nga tang*, we. A prolonged research, with regard to the use of the two Ladakhi words, has shown me that *ngatang* means 'we,' inclusive of the addressed person, and *nga zha* means 'we' exclusive of the addressed person. As I am told by the natives, the different use of the classical words *nged cag* and *nga cag*, we, rests on the same principle.

གླིང་གི་སྐྱ་བ་རྒོད་པོ་འི་བུ་ཚ་ལ། གྲོ་ཡུལ་ནས་གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་བག་མ་ལ་ཁྲིད་བའི་སྐྱུངས་ཡིན།

ཡོད་ཚུག། གླིང་ཡུལ་གྱི་སྐྱ་བ་རྒོད་པོ་དེ་ཞག་ཅིག་ལ་རི་ལ་ཤིངས་ལ་སོང་བས། དེའི་དུས་ལ་གྲོ་ཡུལ་ནས་གྲོ་ཆེན་རྒྱལ་པོ་ཟེར་མཁན་དེ་ཡང་གླིངས་ལ་ཡོངས་སོ། ཞག་ཅིག་ཁོང་གཉིས་ཀ་རི་ཞིག་ལ་དགོངས་ལ་འཛོམ་སོང་། དེ་ནས་ཕར་ལ་ཁོང་གཉིས་ཀ་ཁྲོ་པ་བཙོ་སྡེ། ཤིངས་ལ་ཆེན་ཞིག་འདུགས་པ། ཁོང་གཉིས་ཀའི་གཞིད་མད་ཀུན་ལ་སྐྱེ་ཅེས་ཡོད་ཚུག་པས། ཞག་ཅིག་སྐྱ་བ་རྒོད་པོ་ལ་རི་ན་གསེར་གྱི་མདའ་ཞིག་དང་གཞུ་ཞིག་ཐོབ་སོང་། གྲོ་ཆེན་རྒྱལ་པོ་ལ་དུང་གི་ད་མ་ཞིག་དང་ཕང་ཞིག་ཐོབ་སོང་། དེ་ནས་ཁོང་གཉིས་ཀས་ཟེརས་པ། ང་དང་གཉིས་ཀའི་གཞིད་མད་ཀུན་ལ་ཕྲུག་གུ་སྐྱེ་ཅེས་ཡོད་པ་སང་། གྲོ་ཆེན་རྒྱལ་པོ་ཉེ་རང་ལ་བུ་མོ་ཞིག་སྐྱེ་ཅེས་ཡིན་འགྲོ། ང་ལ་བུ་ཚ་ཞིག་སྐྱེ་ཅེས་ཡིན་འགྲོ། ཡང་ན་ཉེ་རང་གི་བུ་མོ་ངའི་བུ་ཚ་ལ་བག་མ་ལ་དོང་ལེ། ཡང་ན་ངའི་བུ་ཚ་ཉེ་རང་གི་བུ་མོ་ལ་མག་པ་ལ་བཏང་ཡིན་ཟེརས་པ། གྲོ་ཆེན་རྒྱལ་པོས་ཟེརས། ང་དང་གང་པོ་ལ་ཐོབ་ནའང་། ཚོ་ལོ་བཏང་ཡིན་ཟེར་དེ་ཁོང་གཉིས་ཀས་ཚོ་ལོ་བཙེམས་པ། ཞག་བདུན་ཟླམ་བརྩེ་སྡེ་ན། གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་དེ། གླིང་གི་སྐྱ་བརྒོད་པོ་འི་བུ་ཚ་ལ་བག་མ་ལ་ཐོབ་སོང་། དེ་ནས་ཁོང་གིས་བུ་ཚ་དང་བུ་མོ་གཉིས་ཀ་ལ་མིང་ཡང་དེ་རྡུ་བཏགས་སོང་། གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་ལ་གྲོ་མོ་སོ་དཀར་བཏགས། སྐྱ་བ་རྒོད་པོའི་བུ་ཚ་ལ་སྐྱ་བ་དཀར་པོ་བཏགས། དེ་ནས་ཁོང་གིས་རིན་མཐོ་མེད་པ། སྐྱ་བ་དཀར་པོ་ལ། གྲོ་མོ་སོ་གར་བག་མ་ལ་བཏང་ཆད་བཅོས། རྟ་གཅིག་མི་གཅིག

ཡོང་ནའང་བཏང་ཙམ་ཡིན། རྟ་བརྒྱ་མི་བརྒྱ་ཡོང་ནའང་བཏང་ཙམ་བཙོ་སྟེ་ན། ཁོང་རང་རང་གི་ཡུལ་ལ་སོང་བས། སྐྱ་བ་ཀོད་པོས་འདི་ཆད་དོན་ཚང་མ་རྟའི་མདུན་གུའི་ཁ་ཁྲག་གི་ཡི་གེ་བྲི་སྟེ་བོརས། ཅི་བྲིས་ཟེར་ན། གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་དེ་ངའི་བུ་ཚ་ལ་བགམ་ས་ལ་བདང་ཆད་བཅོས་པ་ཡིན། ཁོས་མི་བདང་མི་ཟེར་ཙམ། ངས་མི་ཁྱེར་མི་ཟེར་ཙམ་ཀྱི་མནའ་ཡིན་ཟེར་དེ་བྲིས་སོ། དེ་བོ་བྲི་ཚར་ར་དང་། འབྲོང་ཞིག་ཡོང་སྟེ་སྐྱ་བ་ཀོད་པོ་དེ་སྡིབ་ཅིག་ལ་སྨིད་བཏངས་སོ། རྟ་དེ་སྒ་ཁུར་ནས་གླིང་ཡུལ་ལ་རང་གི་ཁང་པ་ལ་བསླེབ་སོང་། དེ་ནས་ལོ་ཁ་ཅིག་སོང་སྟེ་ན། སྐྱ་བ་ཀོད་པོ་འི་བུ་ཚ་ཆེན་མོ་སོང་སྟེ། ཁོས་ཨ་མ་ལ་ཟེརས་པ། ཨ་མ་ལེ། ང་རི་ལ་ཨ་བའི་རྟུད་ཅོད་ལ་ཆེན་ཟེརས་པ། ཨ་མས་ཟེརས་པ། ད་རྟུང་ཁྱོ་རང་ཆུངུན་འདུག། མ་ཆ་ཟེརས་པ། བུ་ཚས་དབང་བཙོ་སྟེ་ཆེན། ཟེརས། དེ་ནས་ཁོས་རྟ་ལ་སྒ་གདང་ཙ་ན། སྒའི་མདུན་གུའི་ཁ་ཡི་གེ་གསལ་པོ་བྲི་སྟེ་ཡོད་ཚུག་པས། ཕྲུ་གུ་ལ་དེ་བོ་མཐོང་སྟེ་ཡ་མཚན་སོང་ཕྲུ་གུ་དེ་རི་ལ་སོང་སྟེ་སྒང་མཐོན་པོ་ཞིག་གི་ཁ་ལ་བསླེབ་པ། དེའི་ལྗུང་པའི་ནང་དུ་འབྲོང་ཅིག་ཡོད་ཙམ་མཐོང་སོང་། ཁོས་དེ་འབྲོང་ལ་སླུ་ཞིག་བཏངས་སོ།

ལྷ་འབྲོང་ཆེན་ཁམ་པ་དངོས་ལ་ཉོན་ལོ།
འབྲོང་ཆེན་རི་རི་བདག་ལ་གསན་ལོ།
ཁྱེད་ཀྱིས་ཟ་རྒྱུ་ཅི་ཞིག་ཟེད་ལོ།
ཁྱེད་ཀྱི་ས་འཐུང་རྒྱུ་ཅི་ཞིག་འཐུང་འདུག།
ཁྱེད་ཀྱི་འདག་ས་ག་ཙུ་ཡོད་ལོ།

ཟེརས་པ་སང༌། འབྲོང་གིས་གཏམ་ལན་དུ་གླུ་འདི་ལྟར།

ལྷ་གླིང་པའི་ཕྲུ་གུ་དངོས་ལ་ཉོན་ལོ།
ལྷ་གླིང་གི་གླིང་ཕྲུག་བདག་ལ་གསན་ལོ།
ཁྱོད་ལ་ངའི་ཟ་ཅེས་དང་ཅི་ཡ་དགོས་ལོ།
ཁྱོད་ལ་ངའི་འཐུང་ཅེས་དང་ཅི་ལ་དགོས།
ང་ལ་ཐོབ་ན་མིའི་ཤ་རིག་ཟེད་ལོ།
མ་ཐོབ་ན་སེམས་ཅན་གྱི་ཤ་ཟེན་ལོ།
དེ་ཡང་མ་ཐོབ་ན་རྩྭ་ཞིག་ཟེན་ལོ།
ཁྱོ་རང་ངའི་མདུན་ལ་ཡོང་ལོ།

དེ་ཟུག་ཟེརས་པ། དེ་ཚུག་པ་མཚན་སོང་སྟེ། ཁོ་དེ་རྩུ་ལུས་སོང༌། ཐོ་རེ་ཚུག་པོ་སྔ་མོ་ནས་ཡངས་དེ། མདའ་ནང་གཞུ་ཁུར་དེ་ཕྲུ་གུ་ཉེ་མོ་ལ་སོང་སྟེ། འབྲོང་དེ་ལ་མདའ་བདུན་རྒྱབ་ནས། འབྲོང་དེ་ཤི་ཅེས་ལ་ཐུག་སོང༌། དེ་ནས་ཕྲུ་གུ་མགྱོགས་པ་སོང་སྟེ་འབྲོང་གི་གྲོད་པ་ཤག་སྟེ་བལྟས་པ། དེའི་ནང་ནས་མི་ཁྲིམ་འཁུར་མཁན་དང༌། དོག་ཅེ་འཁུར་མཁན་མང་པོ་བྱིང་སྟེ་སོང༌། དེ་ཚང་མའི་རྡིང་ན་ཁོ་རང་གི་ཨ་ཕ་སླེབ་ཆོད་པོ་བྱིང་བས། ཕྲུག་དང་ཐུག་སྟེ་ན་ཨ་ཕ་ཤི་སོང༌། དེ་ནས་ཁྱིམ་ཨ་བའི་རོ་དེ་མདའ་གསུམ་གྱི་ཁ་བསྒྲིག་ནས། རི་མཐོན་པོ་ཞིག་གི་ཁ་སྤུར་ཁང་བཅོ་སྟེ་ན། ཕྱིར་ལོག་སྟེ་གླིང་ཡུལ་ལ་ཡོང་སྟེ་ན། ཨ་གུ་དཔལ་ལེའི་མདུན་ལ་སོང་སྟེ་ཟེརས་པ། ང་ལ་བག་མ་ཞིག་ཁྱོང་ན། གྲོ་ཡུལ་ལ་གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་གྲོ་མོ་སློ་གར་ཟེར་མཁན་ཞིག། ངའི་ཨ་བས་ཁྱོང་ཚད་བཅོ་སྟེ། མནའ་བོར་དེ་ཡོད་ཟེར་དེ་ཡི་གི་འདུག་ཟེརས་པ།

ཨགུ་དཔལ་ལེས་ཀི་སར་ལ་ཞུས་པ། དེ་ནས་ཚང་མས་གྲབས་བཅོ་སྟེ། གྲོ་ཡུལ་ལ་ཚ་མཁན་དཔལ་ལེ་ཀོད་པོ། ཁྲའི་མགོ་ཁྲའི་ཐུང་། ཨང་གར་ལངས་པ། མི་ཡུལ་ལ་མེད་པའི་གྲོད་པོ་ཆེ། ལག་ལག་རིངས། ཀང་ཀང་
ཙ
རིངས་ཟེར་མཁན་ཚང་མ་ཁྲིད་དེ་གྲོ་ཡུལ་ལ་སོང་། དེ་ནས་ཁོང་གྲོ་ཡུལ་ཕྱོགས་ལ་ཟླ་བདུན་ཟམ་འགྲུལ་དེ་ན། གྲོ་ཡུལ་ལ་ཙ་བིག་མ་བསླེབ་པ། དེ་ཏུ་རྒྱ་མཚོ་ཆེན་པོ་ཞིག་ཡོད་ཚུག། ཨ་གུ་དཔལ་ལེ་སྤྲོ་རྩལ་དེ་ཆུའི་མདུན་ལ་བསླེབ་སྟེ། ཕེ་ཁལ་ཅིག་ལ་ཁོ་ལག་ཏུ་སྟེ། ཕོ་ལོང་ཞིག་གི་ཁ་ཟིན་ཞིག་འདུགས་པ། དེ་ཆུའི་ཕར་ཁ་ལ་བུ་མོ་བདེ་མོ་ཞིག་གིས། གསེར་གྱི་ཆུ་དཀར་ཞིག་འཁུར་དེ་ཆུ་ལ་ཡོང་ཅེས་མཐོང་སྟེ། དཔལ་ལེས་གླུ་ཞིག་བཏངས་སོ།

ཆུའི་ཕར་ཁའི་བུ་མོས་དངོས་ལ་ཉོན་ལོ།
ཆུའི་ཕར་ཁའི་ཇོ་ཇོས་བདག་ལ་གསན་ལོ།
གྲོ་ཡུལ་གྱི་མཁར་དེ་ག་ན་ཡོད་ལོ།
གྲོ་ཆེན་རྒྱལ་པོ་གཙུ་བཞུག་སེད་ལོ།
གྲོ་ཆེན་རྒྱལ་པོ་འི་བུ་མོ་སྐྱེས་ས་མ་སྐྱེས་ལོ།
གྲོ་ཡུལ་མཁར་གྱི་ལམ་དེ་ག་ན་ཡོད་ལོ།

དེ་ལྟག་ཟེརས་པ། བུ་མོས་ཆུ་དཀར་བོར་དེ་དཔལ་ལེ་ལ་ལན་དུ་གླུ་འདི་ལྟར།

ལྷ་ཕར་ཁའི་མི་དེས་དངོས་ལ་ཉོན་དང་།.
ཁྱོད་ཡོང་ཡོང་གང་གི་ཡུལ་ནས་ཡོངས།
ཁྱེད་འགྲོ་འགྲོ་གང་གི་ཡུལ་ལ་འགྲོ་ཡིན་ལོ།

གྲོ་སྐྱལ་གྱི་མཁར་དང་ཁྱོད་ལ་ཅི་བཅོ་ཡིན།
རྒྱལ་པོ་དང་ཁྱོད་ལ་ཅི་ལ་དགོས་ཡིན།
རྒྱལ་པོའི་བུ་མོ་དང་ཁྱོད་ལ་ཅི་བཅོ་ཡིན།
མཁར་གྱི་ལམ་དེ་ཁྱོད་ལ་ཅི་ལ་དགོས།
ཁྱོད་ར་ལ་ཡོངས་ས་གཉིས་ལ་ཡོངས།
ཁྱོད་ལ་ཤོག་པ་ཡོད་ན་ཕུར་དེ་ཡོང།
ཁྱོད་རྐྱལ་ཤེས་ན་ཆུ་ལ་རྐྱལ་དེ་ཡོང་ལོ།

དེ་ཟུག་ཟེརས་པ། དཔལ་ལེ་ལ་སྤྲོ་ཡོང་སྟེ། ཆུ་ལ་རྐྱལ་དེ་ཡོངས་པ། ཕར་ཀ་ལ་ཙ་ཕིག་མ་ཕིང་བ། དཔལ་ལེ་ཆུའི་ནང་དུ་འགྲོལ་ནས་ཆུས་འཁྱེར་ཐུན་བཅོས་པས། བུ་མོ་དེ་ཙུ་འིན་ཞིག་ཆུའི་མཐའ་མས་སོང་སྟེ། དཔལ་ལེ་ཆུའི་ནང་ནས་ཟུམ་སྟེ་ཕིངས་སོ། མཐའ་མ་ལ་བསླེབ་སྟེ་ན། བུ་མོས་ཟེརས་པ། ཁྱོད་རིས་ང་ལ་མི་ཤ་བཀལ་ཅེས་ལ་ཡིན་ནོག། ད་ཁྱོད་གར་ཆ་ནའང་སོང་། མཁར་གྱི་ལམ་དེ་ངས་མི་བསྟན་ཡིན། གྲོ་ཆེན་རྒྱལ་པོའི་བུ་མོ་ང་རང་ཡིན། དེ་ཟུག་ཟེར་དེ་ན། བུ་མོ་མཁར་ལ་སོང། དཔལ་ ལེ་དེ་ ཡུལ་ མཇུག་ ལ་ མཁར་ གྱི་ རྒྱུན་ པ་ ཨ་ མ་ བུ་མོ་ གཉིས་ ཡོད་རྩོག་པ། དེ་ཙུ་བྲང་ས་ལ་འདུགས། དེ་རྩོག་པ་ལག་ལག་རིངས་དང་རྐང་རྐང་ རིངས་ ཨང་གར་ ལངས་པ་ ཚང་ག་དེ་ཆུའི་ མདུན་ལ་བསླེབ་ པ་སང། ཨ་གུ་དཔལ་ལེས་ཨང་ལམ་ཞིག་བསྟན་དེ་ཁོང་ཡོང་སྟེ་ཚང་མ་འཛོམ་སོང། དེ་ནས་ཨ་གུ་དཔལ་ལེ་མཁར་ལ་སོང་སྟེ་རྒྱལ་པོ་ལ་ཞུས་པ། རྒྱལ་པོ་ལེ། ཉེ་རང་གི་ བུ་མོ་ང་ ཞིའི་སྦྲིང་ ཡུལ་ལ་སྐྱུ་ བསྐོད་པོའི་བུ་ ཚ་ལ་བག་མ་ལ་བཏང་ཅེས་ལ། ཉེ་ཞ་རང་གིས་ཚད་བཅོ་སྟེ་འདུག་ཟེརས་པ། གྲོ་ཆེན

རྒྱལ་པོས་ཟེརས། ང་ཞ་ཚང་མ་གྲབས་བཅོ་ཡིན་ཟེརས་པ། དཔལ་ལེ་ལོག་སྟེ་བྲང་ས་ལ་ཡོངས། གྲོ་ཆེན་རྒྱལ་པོས་གཉེན་དྲུང་ཚང་མ་བསྡུ་སྟེ་གྲབས་བཅོས་པས། གྲབས་སི་ནང་ན་འདི་ཟུག་བཅོས། བུ་མོ་འདྲན་འདྲ་བརྒྱ་ཟམ་བསྡུ་སྟེ་དེའི་ནང་ན་བུ་མོ་ཤིས་ན། ཁོང་ལ་བུ་མོ་བདང་ཡིན་ཟེར་དེ། གྲོ་ཡུལ་ནས་བུ་མོ་བརྒྱ་ཟམ་བསྡུ་སྟེ་གླིང་པ་ལ་ཕྱེ་བཙུགས་པ། ཨ་ནེ་བཀུར་དམན་རྒྱལ་མོས་དཔལ་ལེ་ལ་བསླབས་སོང། ང་གསེར་སྦྲང་ཞིག་ལ་ཛྷུ་སྟེ་བུ་མོ་འི་དཔལ་བའི་ཁ་འབབས་ཡིན། དེ་བུ་མོ་ཁྱོ་རང་གིས་ཟུམ་ཟེར་དེ་བསླབས་པ། དེ་ནས་མི་མང་པོ་བསྡུ་སྟེ་གླིང་པའི་ཨ་ཀུ་དཔལ་ལེ་སོང་སྟེ། བུ་མོ་ཚང་མ་ལ་བལྟས་པ། གསེར་སྦྲང་དེ་བབས་པ་མཐོང་སྟེ་དེ་བུ་མོ་ཟུམ་སོང། དེ་ནས་མི་ཚང་མ་ཡ་མཚན་སོང་། གྲོ་ཆེན་རྒྱལ་པོས་ཡང་སྐྱོན་བཅོ་སྟེ་ཟེརས། ཞག་ཅིག་ལ་ཤ། ཤ་ཁོག་བརྒྱ་སྤུས་ཟན། དེ་ལ་ངའི་བུ་མོ་བགམ་ལ་བདང་ཡིན་ཟེར་དེ་སྐད་བདང་སྟེ་མི་ཚང་མ་བསྡུ་སྟེ། ཤ་ཁོག་བརྒྱ་ཁྱོང་སྟེ་བོརས་པ་སང། གླིང་པའི་གྲོད་པོ་ཆེ་ཡོང་སྟེ་ཤ་ཁོག་བརྒྱ་ཟོ་སྟེ། རུས་པ་ཚང་མ་ཡང་ཟོས་པ། ཡང་ཇོ་ཇོ་གླིང་པ་ལ་ཐོབ་སོང། ཡང་གྲོ་ཆེན་རྒྱལ་པོས་སྐྱོན་བཅོ་སྟེ་ཟེརས་པ། རྒྱམ་མཚོའི་ཆུ་ཐག་རིངས་ཡོད་ཚུགས་པ། དེའི་རྒྱམ་ཚོ་ནས་ཆུ་ཆུ་དཀར་བརྒྱ་ཟམ་མཁར་ལ་ཞག་གཅིག་གི་ནང་ཁྱོང་ན་བུ་མོ་ཐོབ་ཡིན་ཟེརས་པ། ཡང་མི་ཚོགས་མང་པོ་བསྡུ་སྟེ། ཡང་གླིང་པའི་ལག་ལག་རིངས་དང་རྐང་རྐང་རིངས། གཉིས་ཀས་ཕྱོ་ལེན་བདང་ནས། ཆུ་དཀར་བརྒྱ་བས་ཐེབ་ཁྱོང་ནས་མཁར་ཚང་མ་ཆུ་སྐང་སོང། ཡང་ཇོ་ཇོ་གླིང་པ་ལ་ཐོབ་སོང། དེ་ནས་གྲོ་ཆེན་རྒྱལ་པོ་ལ་ཅིའང་ཟེར་མ་ཤེས་པ། ད་ལྟ་བུ་མོ་འི་ཨ་ཞང་གཞན་མ

ཡུལ་ཞིག་ལ་སོང་སྟེ་མེད་རྩུག། ཨ་ཞང་བསླེབ་སྟེ་མེན་བ་མི་བཏང་ཟེར་དེ་བོརས་པ། ཟླ་བ་གཅིག་ཟམ་དེ་རུ་ལུས་སོང་། དེ་ནས་ཨ་ཞང་བསླེབ་སྟེན། ཉོ་པ་མེད་པ་མི་བཏང་ཟེརས་པ། གླིང་པས་མི་བཙལ་དེ་ཉོ་པ་བཙོ་ལྷ་ཟམ་བཙོ་སྟེ་མཁར་ལ་ཁྲིརས་པ། མཁར་གྱི་སྒོ་ལ་ཉོ་བླུ་བཏང་ངན་ཞིག་ཞག་བདུན་ལུས་སོང་། དེ་ནས་མཁར་གྱི་ནང་ལ་བསླེབ་སྟེ། དེ་རུ་ཡང་ཚང་བླུ་བཏང་ངན་ཞིག་ཞག་གསུམ་ལུས་སོང་། དེ་ནས་ཨ་རག་བདུད་རྩེ་དང་མགོ་འཁོར་གྱིན་ཞིག་མཚན་གསུམ་བག་སྟོན་བཏངས། ཉིན་གསུམ་དགའ་སྟོན་བཏང་གིན་ཞིག་འདུགས། དེ་ནས་བག་མ་འཁྲིད་དེ་ཡོང་བའི་ཞག་ལ། ཨ་ཀུ་དཔལ་ལེ་ལངས་དེ་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

བུ་མོ་འི་ཨ་མ་ཞངས་དེ་ཕྲུག་གི་ཤངས་རིག་རྩིག་ལོ།
བུ་མོ་འི་ཨ་བཱ་ཞངས་དེ་གཡུའི་ཛ་ཞིག་སྤུང་ལོ།
བུ་མོ་འི་མིང་བོ་ཞངས་དེ་ཁ་དག་གི་ཧེ་ཡངས་རིག་རྩིག་ལོ།
བུ་མོ་འི་ཨ་ཞང་ཞངས་དེ་ཡ་ཙགས་ཀྱི་ཛ་ཞིག་སྤུང་ལོ།
ཡ་དོ་མཛའ་མོ་ཞངས་དེ་ཁ་དག་གི་ཧེ་ཡངས་རིག་རྩིག་ལོ།

དེ་ཟླུག་ཟེརས་པ་སང་། ཁོང་ཚང་མས་ཡ་ཙགས་དང་གོན་ཅེས་ཚང་མ་ཁྲོང་སྟེ། གཉེན་ཚང་མས་ཁ་དག་བཏགས། དེ་ནས་ཛོ་ཛོ་མཁར་ནང་ནས་ཁྲིད་དེ་ཕེ་སྤུ་རུ་ཁྲོངས་པ། ནོར་བུ་ཚང་མ་བུ་མོ་དང་མཉམ་པོ་འབྲང་སྟེ་ཡོངས། དེ་ནས་ཨ་བཱ་ལ་ནོར་བུ་ཁ་ཅིག་བཏངས་སོ ཞང་ལ་ནོར་བུ་ཁ་ཅིག་བཏངས་སོ། ཨ་མ་ལ་ནོར་བུ་ཁ་ཅིག་བཏངས་སོ། མིང་བོ་ལ་ནོར་བུ་ཁ་ཅིག་བཏངས་སོ། དེ་ནས་ཁོང་གིས་བག་མ་ཁྲིད་དེ་གླིང་ཡུལ་ཕྱོགས་ལ་ཡོངས། དེ་ནས་ཐང་ཆེན་མོ་ཞིག་གི་ཁ་བསླེབ་པ། ཛོ་ཛོ་

མང་པོ་སྐྱིམ་སོང། དེའི་ཐང་གི་དཀྱིལ་ལ་ཆུའི་ཤེར་ཞིག་ཡོད་ཚུག། ཛོ་ཛོ་ཏྲའི་ཁ་ནས་བབ་སྟེ་དེའི་ས་བྲུས་པ། ཆུ་ཉུ་ཏུན་ཞིག་བིང་ནས། དེ་ཟུག་མཐོང་སྟེ། ཨ་ཀུ་དཔལ་ལེགས་གྲི་བཙུགས་པ། ཆུ་མང་པོ་བིང་སྟེ་ཡོང་ནས་ཁོང་ཚང་མས་ཆུ་འཐུང་སྟེ་ན་ཡོངས་པས། དེ་ནས་ཁྲའི་མགྲོ་ཁྲའི་ཐུང་གླིང་ཡུལ་ལ་སྡོན་ལ་སོང་སྟེ་གླིང་ཡུལ་ན། ཧྲོ་པ་མང་པོ་དང་སྲུས་མི་མང་པོ་ཁྲིད་དེ་ཞག་གཉིས་ཀྱི་ལམ་དུ་བསླེབ་པས། དེ་ནས་ཁོང་ཚང་མ་གླིང་མཁར་དུ་བསླེབ་སྟེ་སྐུ་དྲག་ཚང་མ་དང་འཛོམ་སྟེ། བག་སྟོན་ཆེན་མོ་རིག་སྟེ། མཚན་གསུམ་བག་སྟོན། ཉིན་གསུམ་དགའ་སྟོན་བདངས། དེ་ནས་ཁོང་གླིང་ཡུལ་ལ་སྐྱིད་པོ་འི་ནང་དུ་གནས་སོ །།

12. Notes on the Freshwater Fauna of India. No. XI.—Preliminary Note on the Occurrence of a Medusa (*Irene ceylonensis*, Browne) in a Brackish Pool in the Ganges Delta and on the Hydroid Stage of the Species. *(Plate II., fig. 5.)*

By N. ANNANDALE, D.Sc.

Among other interesting specimens collected last month (November) in brackish pools at Port Canning, Lower Bengal, by Mr. C. A. Paiva, Entomological Assistant in the Indian Museum, are three examples of a Medusa belonging to the order Leptomedusæ. The pool in which they were taken belongs to the group in which Stoliczka[1] discovered the Polyzoon *Membranipora bengalensis* and the Actinian *Sagartia schilleriana* thirty-eight years ago. In Stoliczka's time the water of these pools was found by analysis to contain a proportion of about one-third of the amount of the salts ordinarily present in sea water. There is no reason to believe that any permament change in this respect has taken place since 1868, but the salinity of the water must vary greatly with the seasons. The fauna of the pools exhibits a mixture of marine and freshwater characters, with which I hope to deal more fully on another occasion.

As regards the identity of the Medusa, I have no hesitation in assigning it to Mr. E. T. Browne's[2] recently described species, *Irene ceylonensis*, which was taken by Prof. Herdman off the coast of Ceylon. The original diagnosis of this species is as follows :—" Umbrella probably watchglass-shaped, much broader than high, with thin walls. Velum narrow. Stomach short, situated upon a long cylindrical peduncle. Mouth with four lips, which have a folded margin. Four radial canals. Gonads linear, extending from the base of the peduncle to near the margin of the umbrella. Tentacles about 100. Cirri absent. Sensory vesicles, one between every two tentacles, each vesicle with a single otolith."

In one respect the Port Canning specimens differed from this description very noticeably, or rather appeared to do so, *viz.*, in the proportions of the umbrella. When I first examined them, they had been in 5 per cent. formol for about twenty-four hours and were in a very perfect state of preservation. In this condition the walls of the umbrella were thick, and its width was very little greater than its height. A specimen transferred from formol to spirit, however, soon began to show changes in these respects, and came to agree with the diagnosis after a few days. In each of the specimens several of the vesicles bore two otoliths; but this was also the case in some of the specimens examined by the author of the species, who suggested that the phenomenon was due to twinning. Such vesicles are considerably larger than those which bear one otolith. I also found the "warts or tubercles" noted by Mr. Browne between some of the tentacles and have no doubt that they are, as he suggests, young tentacles in the course of development. Not only does their structure support this view, but the spaces in which they occur are also distinctly greater than those usually occurring between two tentacles. Although one of Mr. Paiva's specimens measures about 20mm. in diameter, none of them are sexually mature, the gonads being represented in the youngest specimen (pl. II. fig. 5) by a linear swelling on the upper part of the radial canals. In an older specimen they extend further down towards the margin.

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[1] *Journ. Asiat. Soc. Bengal*, part ii., 1869, pp. 53, 61.

[2] In Herdman's *Ceylon Pearl Fisheries and Marine Biology*, iv., 1905, p. 140, pl. iii., figs. 9-11.

Since the above was written I have had an opportunity of visiting Port Canning (on December 3rd), accompanied by Mr. Paiva. We found the Medusæ in large numbers in the pool in which they had already been taken, the individuals measuring from less than a millimetre to about twenty millemetres in diameter, but none being sexually mature. In life they were colourless and somewhat more globular than the specimen figured, owing to the umbrella being contracted at the base; younger individuals being slightly deeper in the bell than older ones. They were sluggish in their movements and their umbrellas only contracted at intervals, generally doing so several times over before a period of quiescence. They were most abundant in the centre of the tank, which was there free from weeds. An interesting discovery due to this visit was that of the hydroid stage of *Irene*, which was found growing on weeds at the edge of the pool. There could be little doubt as to its identity with the Medusa, as the pool was a small one and no other Hydroid could be found; but it has not yet been possible to trace the life history. A single Medusa was taken which had just been liberated. It had four stout, tapering tentacles, a feebly developed umbrella and a relatively large manubrium. Unfortunately it died and disintegrated before a complete examination could be made It agreed in every respect with perfect Medusæ in the gonothecæ which had not yet been set free, and was found moving slowly by means of its tentacles among the weeds. The following is a description of the hydroid :—

Colony minute, barely visible to the naked eye; hydrothiza delicate, recumbent, closely adhering, branching in a horizontal plane, giving rise at considerable intervals to upright hydrothecæ and gonothecæ; the whole exoskeleton transparent and colourless. Hydrothecæ with short, irregularly ringed pedicels, which are about one-seventh as long as the cup; the cup cylindrical or broader above, three times as long as broad, closed above by an operculum formed of a number of convergent pieces. Gonothecæ larger than hydrothecæ and with a much longer pedicel, club-shaped, opening above by a single aperture. Polyps, when fully expanded, at least three times as long as the hydrothecæ. Gonophore consisting of an almost cylindrical upright axis, which bears a single Medusa at its apex.

Length of cup of hydrotheca	...	...	0·45	mm.
Breadth „ „ „	...	...	0·15	„
Length of pedicel „	...	...	0·075	„
Breadth „ „ „	...	...	0·06	„

13. Notes on the Freshwater Fauna of India. No. XII.—The Polyzoa occurring in Indian Fresh and Brackish Pools. (Plate II. figs. 1-4.)

By N. ANNANDALE, D.Sc.

Almost as little is known of the Freshwater Polyzoa of India as of any other group occurring in stagnant pools. Carter[1] has described the curious Ctenostome *Hislopia lacustris* from Nagpur and has recorded from Bombay two varieties of *Plumatella*,[2] a *Paludicella*[2] and a form said to belong to the genus *Lophopus*,[2] a species of which has also been reported from Madras.[3] In a former note, belonging to the present series, further particulars regarding *Hislopia*[4] have been given, while in respect to essentially marine genera which stray into brackish water near the estuaries of rivers, Stoliczka[5] has described *Membranipora bengalensis* from the Ganges delta. The object of the present note is to bring together the published information, scanty as it is, regarding the Indian forms and to add thereto the result of observations made during the last two years in the neighbourhood of Calcutta and in the outer Himalayas. The works, of which the greatest use has been made, are Allman's *Monograph of the Freshwater Polyzoa* (London, 1856) and Kraepelin's *Deutsche Süsswasser-Bryozoen* (Hamburg, 1887). Jullien's monograph of the group (*Bull. Soc. Zool. France*, 1885, p. 89) although useful in certain respects is in others capricious; while Harmer's chapter in the *Cambridge Natural History* (vol. 11, p. 493, 1896) affords a valuable summary of the subject. Within the last few years several papers, especially on the American and African species, have been published, but most of them have no very direct bearing on the Indian forms. References to some of the more important will be found in the *Zoological Record* for 1887, 1890, 1893 and 1896.

CHEILOSTOMATA.

MEMBRANIPORA BENGALENSIS, Stoliczka.

The species was orginally found in 1868 in the estuary of the Matla River and in pools containing from one-third to one-fifth of sea-water, *i.e.*, in water which contained from one-third to one-fifth of the percentage of the salts present in ordinary sea-water. Both Mr. C. Paiva and I have recently searched in vain for it in the same pools; but I have found what I take to be dead and worn specimens on bricks in the Matla estuary. The types are in the collection of the Indian Museum, but appear to be in very bad condition, having been preserved in glycerine. They have been submitted, together with the whole collection of marine species, to Miss Thornley, of Liverpool, for examination.

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[1] *Ann. Mag. Nat. Hist.* (Series 3), i, 1858, p 169, pl vii.

[2] *Ibid.* (Series 3), iii, 1859. pp. 333, 335, 341.

[3] Mitchell in *Quart. Journ. Micr. Sci.* (Series 3), ii, 1862, p 61.

[4] *Journ. Asiat. Soc. Bengal*, 1906, p. 59.

[5] *Ibid.*, part ii, 1869, p. 55, pl. xii.

Membranipora is one of the few Cheilostomous genera, which inhabits brackish water. One species is common in ditches on parts of the English coast; but no form has as yet been found in pure fresh water. The genus is cosmopolitan and essentially littoral.

CTENOSTOMATA.

PALUDICELLA.

Carter has recorded an indeterminate species from Bombay (brackish water) and what may be the same or another form of the genus occurs in brackish pools and canals in the Ganges delta. I have not yet had an opportunity of examining it critically. Kraepelin (*op. cit.*, p. 159, foot-note) recognized two species, *P. ehrenbergii*, van Beneden, and *P. mulleri*, Kraepelin, as occurring in Germany, the former having a wide distribution in Europe and North America in brackish and even fresh water near the mouths of large rivers. *P. mulleri* is very close to the genus *Victorella*, which is distinguished from *Paludicella* by the fact that in the latter the zooecia do not stand upright, while in *Victorella*, although direct budding of new zooecia from old ones take place, the older zooecia are vertical and not adherent to the stolon, which is more distinct than in *Paludicella*. Probably the Indian form, if it is distinct from *Victorella*, is identical with one of the European species.

VICTORELLA PAVIDA, Kent.

This species has only been recorded hitherto from a few localities in England and Germany, its small size and plant-like appearance probably having caused it to be overlooked. It is common on sticks and water-plants in brackish pools and canals at Dhappa in the neighbourhood of Calcutta, and also in tanks at Port Canning, the water of which contains a much larger proportion of salt. The species grows very luxuriantly in Lower Bengal and the zooecia arise close to one another, but I do not find any structural difference from the English form such as would justify the creation of a new species.

HISLOPIA LACUSTRIS, Carter.

This is by far the most strictly lacustrine of the Ctenostomes, being found in perennial pools of fresh water in the centre of India. Stoliczka (*op. cit.*, p. 55) states that it probably takes the place in fresh water of the brackish-water *Membranipora bengalensis;* but I have only been able to find it on two occasions, or rather two series of occasions (January and February), and in one pool. Carter's specimens were attached to shells of *Paludina;* mine were on the leaves of *Valisneria spiralis* and were growing in a pool without the slightest shade. In my former note I neglected to say that the tentacles were of uniform length when fully extended. The stolon, which occasionally joins two zoœcia, is quite rudimentary and is no more than a narrowed posterior portion of the anterior zoœcium. It is most apparent at the growing extremities of young colonies, but can occasionally be detected in other instances.

Hislopia is distinguished from *Paludicella* and *Victorella* by the possession of a well-developed gizzard, as well as by the curious structure of the aperture and the absence of a funiculus. If I am right in regarding *Norodonia*, Jullien, as synonymous, the genus ranges from Central India to Southern China. I have seen a form[1] in the Malay Peninsula which belongs to the Indian species.

PHYLACTOLÆMATA.

PLUMATELLA.

Including *Plumatella* and *Alcyonella* according to Allman (1878); *Plumatella* and *Hyalinella* according to Jullien (1885); and *Plumatella* according to Kraepelin (1887).

This genus is probably the most difficult among those represented in fresh water, because of its great variability both as regards individual colonies and as regards races or sub-species and more or less constant varieties. There can be no doubt that the massive agglutinated forms once known as *Alcyonella* are simply phases, produced by environment, of the same genus, from which they arise and into which they may lapse; but little information is available regarding variations produced by external conditions in other respects. The study is further complicated by the fact that although many of the form are probably cosmopolitan, they have been little worked at outside Europe and temperate North America. Kraepelin recognizes four species of the genus,[1] *P. princeps*, *P. philippinensis*, *P. polymorpha* and *P. punctata*. The last of these has only been recorded from Europe and North America, on neither of which continents has it been taken in many localities; but I have recently found it in Calcutta. *P. philippinensis* has only been found in the archipelago from which its name is derived; while forms which may be included in the remaining "species" have been recorded from most parts of Europe, from many localities in North and South America, from temperate and tropical Asia, and from several parts of Africa and Australasia.

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[1] By the kindness of Miss L. Thornley, of Liverpool, I have been able to examine specimens collected by Mr. H. C. Robinson and myself in autumn in a small lake near Jalor in the Siamese Malay States. The spirit in which they were preserved having dried up, they agree closely with Jullien's description of *Norodonia cambodiensis*, differing from Indian specimens found in January and February in the absence of spines at the corners of the aperture. I cannot regard this as more than a varietal difference.—N. A., 12-i-07.

As Kraepelin's monograph is in many respects the most complete as yet available, it may be taken as a basis for a discussion of the classification of *Plumatella;* but any such discussion is bound to have results which are rather negative than positive, until not only the European and North American but also the South American, Asiatic and African forms have been more thoroughly collected, described, figured and compared. What is said at present is said in a tentative manner, merely to prepare the way for further investigations. I hope to have an opportunity of figuring Indian examples on another occasion.

The following are translations of Kraepelin's diagnosis of *P. princeps* and *P. polymorpha*, the two "species" in which he grouped together the whole of the Holarctic forms not included in *P. punctata.*

P. princeps :— "Stem tubular, branching continuously, with creeping and upright lateral offshoots. The latter either simple, branched like a stag's antlers, or compacted together like turf, or, in extreme instances, agglutinated into massive clumps. Ectocyst generally with solid walls, of a deep brown colour and thickly encrusted, with a more or less prominent keel, which usually passes through a broad delta-like area into a very sharply separated soft zone surrounding the aperture. The statoblasts (on a firm support) of two kinds; those surrounded by a ring of air cells elongate, 0·36—0·57 mm. long and 0·2—5·3 mm. broad; the relative proportions of breath and length as 1 to 1·53—as 1 to 1·28. ...... The sessile form generally larger and broader (0 4—0·5 mm. long and 0·3—0·4 mm. broad), very variable in form, with a delicate serrated margin. Number of tentacles, 42 to 48 (so far as it is at present investigated)." (*Deutche Süsswasser Bryozoen*, i, p. 119).

P. polymorpha :—" Stem tubular, with creeping and upright lateral offshoots. The latter either simple, branched like a stag's antlers, or compacted together like turf, or agglutinated into massive clumps. Ectocyst generally with delicate walls, often quite hyaline (especially in the younger offshoots), or straw-coloured, more seldom of a deep brown colour with a sharply separated hyaline zone surrounding the aperture. Keel generally absent, sometimes, however, prominent even in hyaline forms.

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[1] For a recent account of the distribution of *Plumatella* see Zykoff in *Zool. Anz.* xxv., p. 181.

Statoblasts on firmer supports often of two forms (on leaves generally only of one). Floating statoblast roundish oval, medallion-shaped, 0·214 to 0·53 mm. long and 0·2 to 0·413 mm. broad; relative proportions of breadth and length as 1 to 1—as 1 0 to 1·5; the sessile form often with reticulated markings on its margin, not differing fundamentally in form or size from that of *P. princeps.*" (*ibid.*, p. 122.)

The form described by the same author under the name of *Plumatella philippinensis* is diagnosed as follows:—"Colony branched like a stag's antlers, only with horizontal creeping branches, very stout. The ramifications frequently afford a characteristic representation of a "Dichasium," inasmuch as the main axis apparently ends in seven short unbranched little tubes between two approximately equal stout lateral axes. Tubes almost uniform, dark reddish brown (generally even the youngest), somewhat burnished, not encrusted, strongly keeled, but with the region round the aperture not hyaline. This region level (in spirit specimens), closing the aperture like the lid of a box. Statoblasts which are provided with a ring of air-cells resembling those of *P. emarginata*, of a deep brown colour; length 0·4 to 0·471 mm., breadth 0·2 to 0·255 mm. Relative proportions of breadth and length as 1 to 1·7—as 1 to 2·07. Number of tentacles uncertain. Fundus of the stomach conical, tapering to a point." (*ibid.*, p. 118, note.)

P. punctata is easily distinguished from any of the above by its thickened hyaline ectocyst, which causes it to resemble *Lophopus* to some extent. The forms (*punctata*, Hancock; *vesicularis*, Leidy; *vitrea*, Hyatt, and *cophydea*, Kafka) included in this species by Kraepelin appear to be synonymous. *P. vesicularis* and *P. vitrea* constitute Jullien's genus *Hyalinella*, which is unnecessary.

The diagnosis of *P. philippinensis* is clear enough; but those of *P. princeps* and *P. polymorpha* are so full of qualifying words that they are useless in the determination of specimens. Granted that *Plumatella punctata* and *P. philippinensis* are distinct species, only two courses seem at all permissable as regards the remainder of the forms which have been described in the genus and in *Alcyonella*, viz., either to regard them for the present as one extremely variable species with a number of more or less constant subspecies and varieties, and liable to undergo a number of temporary changes owing to the effect of environment on the individual colony; or to treat every adequately described form which has not actually been proved to be a temporary phase as a distinct species. Even granted that Kraepelin's diagnoses of his two species are sufficiently exact, it does not seem legitimate (especially when well-known names are concerned) to give new names to previously described forms, however great the confusion regarding them may be, if it is possible to discover what form the author of the earliest recognizable description had in his mind; and Kraepelin himself gives an elaborate synomony. Moreover, he refers to his *P. princeps* as consisting of the "*Emarginata-Reihe*" and to his *P. polymorpha* as consisting of the "*Repens-Reihe*" of the genus. So far as the forms in India are concerned, it is not impossible that only two species, both rather variable, occur, in addition to *P. punctata*, but in any case it would be preferable to name them *P. emarginata*,[1] Allman, and *P. repens* (Linn.). As a matter of opinion, I think it probable that at least three species distinct from *P. punctata* and *P. philippinensis*, are found. That all of these forms can be identified with European "species" is a powerful argument for their being regarded as specifically distinct.

PLUMATELLA REPENS (Linn.)

P. repens *and* coralloides, *Allman*, pp. 93 and 103, pl. v and pl. vii, figs. 1-4; Alcyonella fungosa, *ibid.*, p. 87, pl. iii, figs. 1—7; P. polymorpha *vars. a* and *β*. (*partim*) *Kraepelin*, pp. 122, 123, pl. vi, figs. 112, 119; pl. v, fig. 22, pl. vii, figs. 139—142.

Carter, following Allman in his identification, recorded *P. repens* from Bombay, and several phases of the same species occur commonly in Calcutta. The most abundant of these is identical with Allman's *P. repens* var. *β*. In this form the zoœcia are frequently not adherent, the surface is but feebly encrusted and has only a faint tinge of colour; there is no keel or furrow, and the free zoœcia are quite cylindrical without a clearly defined distal zone. The statoblasts are very variable. Those adapted for floating resemble Allman's fig. 7 on his plate v, or Kraepelin's fig. 139 on his plate vii. Sometimes, however, the zoœcia are recumbent, as in Allman's var. *a*. Under certain conditions either of these two phases may pass into the forms referred to by Allman as *P. coralloides* and *Alcyonella fungosa*, and, in this case, the floating statoblasts also become modified in most though not in all instances and have the irregular outline of Kraepelin's fig. 140 on pl. vii of his monograph. I have found specimens in which different parts of the same colony could be assigned to the three different forms, while intermediate stages were not absent.

The mode of occurrence of the different phases is interesting. Allman's var. *a* I have found on the under surfaces of bricks on which there was considerable area but very little space above or below, between the leaves of rushes and on the shells of Paludina,[2] while the same author's var. *β*, which is commoner in Calcutta, here occurs chiefly on the stems of water-plants, especially of grasses growing near the edges of the tanks, and on the hanging roots of *Pistia stratiotes*.

These same structures frequently form the support of the Sponges *Spongilla carteri* and *S. crassissima*, and it is when the Sponges and the Polyzoon settle down together that the latter is forced to undergo the modifications which change it into the phases *fungosa* and *coralloides*. As the sponge grows round the base of the zooecia the latter are pressed together and become elongated in proportion to the extent to which they are buried. If the aperture were not on the external surface of the Sponge, the polypide would be unable to expand its tentacles and so would perish for want of food. The relationship between the Sponge and the Polyzoon, although it occurs very commonly, is a casual one, probably beneficial rather to the Sponge, as giving it additional support, than to the other organism. Some of the largest examples of *Spongilla carteri* I have found have been permeated by colonies of *P. repens* (*coralloides*), the zooecia of which had reached a great length before undergoing division, but had bifurcated many times over on the outside of the sponge without ever extending much beyond it. In smaller specimens the tubes are frequently simple or have only branched to a slight extent.

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[1] Strictly speaking the specific name should be *Plumatella benedeni*, as *Alcyonella benedeni* was described before *Plumatella emarginata*.

[2] Never on those of *Ampullaria*, which offer a more extensive area, but are more frequently carried by the mollusc out of the water.

P. repens, as far as Calcutta is concerned, occurs most commonly, if not only during the rains and in winter. Under natural conditions it does not appear to be very prolific of statoblasts in this locality; but if a colony is kept in a glass of water it soon produces both floating and sessile forms in considerable abundance. In the tanks these bodies appear to be more numerous towards the end of the rains and at the beginning of the hot weather than during the intervening cool season. I have often found *P. repens* and *P. emarginata* growing together on the same brick or plant.

PLUMATELLA EMARGINATA, Allman

P. emarginata *and* stricta, Allman, pp. 99, 104, pl. vii, figs. 5–10; P. princeps *var.* emarginata, Kraepelin, p. 120, pl. iv, figs. 108; pl. v, fig. 123; Alcyonella benedeni, id., p. 119, pl. iv, fig. 113.

The only difference between *P. emarginata* and *P. stricta* is that the latter has no furrow and keel on the zooecia. I find every variation between a well developed furrow and keel and complete absence of both these features in specimens from Calcutta; indeed, they are not equally developed, in some cases, on all the zooecia of the same colony. Regarding the two forms as identical, *P. emarginata* may be recognized by its densely pigmented zooecia with their pale distal zone, and by the more or less elongated form of its statoblasts. The diameter of the tubes is generally smaller than is the case with *P. repens*, but their walls are stouter. When the two species are growing together the contrast between them is very striking even to the naked eye. Agglutinated colonies with parallel, vertical tubes (*Alcyonella benedeni*,[1] Allman) often occur together with the more diffuse phase during the winter months.

Carter has recorded *P. stricta* from Bombay. Both forms are common in the Calcutta tanks on floating sticks and submerged bricks. I have found statoblasts closely resembling those of the species floating on the surface of small artificial reservoirs in May at Kurseong in the Eastern Himalayas (alt. 5,000 feet). *P. emarginata* has also been recorded from the Malay Peninsula, Japan, Australia and South America, as well as as from Europe and North America.

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[1] Strictly speaking the specific name should be *Plumatella benedeni*, as *Alcyonella benedeni* was described before *Plumatella emarginata*.

My remarks as to seasonal occurrence and the production of statoblasts in *P. repens* apply also to this form.

PLUMATELLA ALLMANI, Hancock.

P. allmani, P. diffusa, P. jugalis, P. dumortei *and* (?) P. elegans, *Allman*, pp. 105, 106, 107, 108, pl. vi, figs. 1, 2; pl. viii. P. princeps (*part.*) *and* P. polymorpha (*part.*), *Kraepelin*, pp. 199, 122.

It is very difficult to draw up an exact definition of the forms I have grouped under the name *P. allmani;* indeed, it is even possible that they are not specifically distinct from those grouped together as *P. emarginata;* but in India, at any rate, the former not only merge into one another, but have certain characters in common by which they may be distinguished from the latter. In the first place, the pigmentation of the zoœcia, which is more intense in older than in younger colonies, is less intense, if it is present, in what I call *P. allmani* than in what I call *P. emarginata*, and is more translucent even when it is definitely present; in the second, the zoœcia are irregular in outline and are more or less contracted at their bases, unless the colony is actually under tension; while, in the third, although the free statoblasts are always elongated as a whole, with rounded ends, the central capsule, which varies greatly in shape, is small as compared with the ring of air cells. Kraepelin considers the proportions of the statoblast a very important character in differentiating *P. princeps* from *P. polymorpha*, although this is not a specific feature in *P. philippinensis*. I find, however, that in certain cases they are by no means constant, and the limits of variation given by Kraepelin himself are considerable.

The forms referred to by me as *P. allmani* were found in September attached to the leaves and stems of various water-plants floating on the surface and growing at the edge of the lake Bhim Tal in Kumaon (altitude 4,500 feet). A large number of specimens were obtained, some being apparently much younger than others, although all the colonies were small, covering less than a square inch in area. It seemed possible at first sight to separate them into two lots, the extreme phase of one of which agreed exactly with Hancock's figure of *P. allmani*, while that of the other closely approached Allman's *P. elegans*. A closer examination, however, showed a large number of intermediate stages not only as regards colonies but also as regards individual zoœcia. All the colonies agreed in being adherent to their supports so far as the proximal and middle parts of the zoœcia were concerned; but in those which were attached to plants with divided leaves, the zoœcia often extended across the space between two leaflets. This is what I mean when I talk of the colony being under tension. In such cases the zoœcia were elongated, slender, cylindrical and often sinuous, while their keels, probably owing to the necessity for strength, were well developed throughout; the degree of pigmentation varied somewhat, but was never great. In colonies growing on comparatively broad leaves, however, the zoœcia were stouter and shorter and were all more or less swollen at their distal extremity, the degree to which the keel was developed varying considerably even as regards different zoœcia of the same colony. A further difference in such colonies could also be observed in reference to their apparent age. In some of them no growing or perfect statoblasts were present, and the valves of the statoblast from which the colony had originated still adhered to it. In such colonies practically no pigment was present in the zoœcia, which were very little distorted and had the form of those of *P. diffusa*. In other colonies, growing under the same conditions, almost every polypide bore a considerable number of statoblasts. In such colonies the zoœcia were pigmented at the base of the free portion to a variable extent and often had a more or less "claviform" outline, the distal extremity being swollen and distorted. The proximal, adherent part of each zoœcia was always devoid of pigment and was often so distinct as to have almost the appearance of a stolon.

There was no difference between the statoblasts of those forms which resembled *P. elegans* and of those which agreed with *P. allmani*. In both, sessile statoblasts were present as well as free ones. The latter were very little smaller than the former, but their air cells occupied a considerable, although very variable, porportion of their bulk; the margins of the sessile ones were reticulated and entire. Many of the free statoblasts agreed (except that the central portion of the capsule was smooth) with Allman's figure (pl. viii, fig. 9) of that of *P. elegans*, having a circular or almost circular capsule but a moderately elongated outline as a whole. In others the capsule was distinctly oval and occupied a greater part of the statoblast. Such statoblasts were lunate in side view.

PLUMATELLA PUNCTATA, Hancock.

P. punctata, Kraepelin, p. 126, pl. iv, figs. 110, 115, 116; pl. v, figs. 124, 125; pl. vii, figs. 153, 154.

During the present month (January 1907) I have found this very distinct species growing luxuriantly, together with *P. repens* and *P. emarginata*, on the leaves and stems of water-plants in a tank in the Calcutta Zoological Gardens. My specimens agree with Kraepelin's var. *densa*. The statoblasts are large and of the same author's "autumn form." The name of the species is derived from the spotted appearance of the colonies due to the dark stomachs of the polypides seen through the transparent ectocyst.

LOPHOPUS.

Forms which may belong to this genus have been recorded on two occasions from India, from Bombay by Carter (*op. cit.*) and from Madras by Mitchell (*op. cit.*). Regarding the examples from Madras no information is available, while Hyatt, relying on Carter's description of the Bombay form, placed this form in the genus *Pectinatella.* As no further specimens have been examined, the generic position of "*Pectinatella carteri,*" as Hyatt called it, must remain doubtful. The form here noted has already been described from Queensland and is very closely related to the common *Lophopus crystallinus*, which is widely distributed in Europe and North America. Another form, having an almost circular statoblast, has been described from Brazil.[1] The genus is easily recognized on account of its large, simple statoblasts and swollen, hyaline ectocyst. From *Pectinatella* it is distinguished by the absence of hooks on the statoblasts.

LOPHOPUS LEDENFELDI,[2] Ridley. (Plate ii. figs. 1–4).

L. ledenfeldi, *Ridley* in Journ. Linn. Soc. xx, p. 64, pl. 2, 1890.

Differentiated from *L. crystallinus* (Pallas) by the shape of its statoblasts, which are distinctly truncated at one or both ends and are devoid of the pointed prolongations of the two extremities which occur in those of the northern species. The tentacles are also longer and more slender.

Habitat: Bhim Tal (lake), Kumaon: *alt.* 4,500 feet. On roots of *Lemna* and stems of other water-plants. September, 1906.

Remarks: The form of the colonies and polypides agrees very closely with that of European specimens, so far as it is possible to judge without actual comparison of living specimens; but I think that both polypides and colonies are smaller than those which commonly occur in northern latitudes and that the tentacles (which number from 20 to 30, are distinctly longer in proportion to their girth. No colony was seen which measured more than about 3 mm. in length and 2 mm. in breadth; but such colonies contained a large number of polypides. The development of the ectocyst was fully equal to that commonly found in *L. crystallinus*, each colony when retracted resembling a small mound of transparent jelly, in which the yellow stomachs of the polypides could be detected. The polypides were arranged in palmate formation. The statoblasts, on which alone I rely in regarding this form as specifically distinct from *L. crystallinus* and identical with *L. ledenfeldi*, measured on an average 1 mm. by 0·6 mm., and were fairly uniform in size. Some colonies contained only a few, and those mostly not yet fully developed; others contained a considerable number. Numerous statoblasts, which were easily distinguished from those of *Plumatella* by their large size, were found on the surface of the lake. Their margins were generally broken and therefore irregular. (Plate II, fig. 2).

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[1] Meissner in *Ges natur. Freunde*, Berlin, 1893, p 260, figs 1 and 2.

[2] In this paper as originally read I regarded the Kumaon *Lophopus* as a new species, and called it *L. himalayanus* I now think that this was an error.—N A., 27-i-07

LIST OF POLYZOA RECORDED FROM FRESH AND BRACKISH WATER IN INDIA.

CHEILOSTOMATA

Membranipora bengalensis, Stoliczka.	Ganges delta (brackish water).

CTENOSTOMATA

Victorella pavida, Kent ..	Ganges delta (brackish water).
? *Paludicella*, sp.	Bombay and Ganges delta (brackish water).
Hislopia lacustris, Carter ...	Nagpur and Calcutta. (fresh water).

PHYLACTOLÆMATA

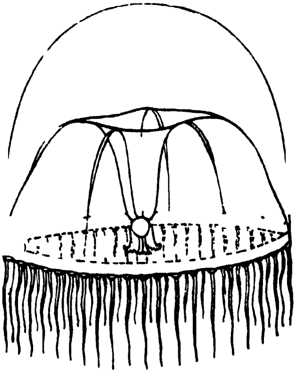
Plumatella repens (Linn.) ...	Bombay and Calcutta.
„ *emarginata*, Allman ...	„ „ „
„ *allmani*, Hancock ...	Bhim Tal, Kumaon (4,500 feet).
„ *punctata*, Hancock ...	Calcutta.
Lophopus ledenfeldi, Ridley ...	Bhim Tal, Kumaon (4,500 feet).
? *Lophopus*, sp.	Madras.
Pectinatella ? *carteri*, Hyatt ...	Bombay.

EXPLANATION OF PLATE II.

Figs. 1—4. Statoblasts of *Lophopus ledenfeldi*, Ridley, all highly magnified.

Fig. 1; perfect statoblast.
Fig. 2; broken statoblast from surface of lake.
Fig. 3; central portion of a single valve of statoblast, from within.
Fig. 4; edge of statoblasts more highly magnified.

Fig. 5. Young example of *Irene ceylonensis* Browne, from a specimen recently preserved in formaline, x 6.



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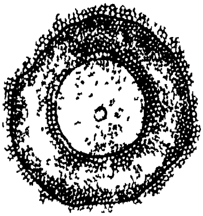

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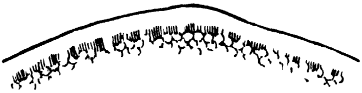

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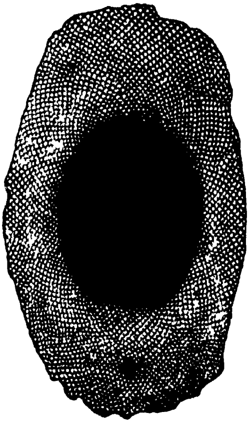

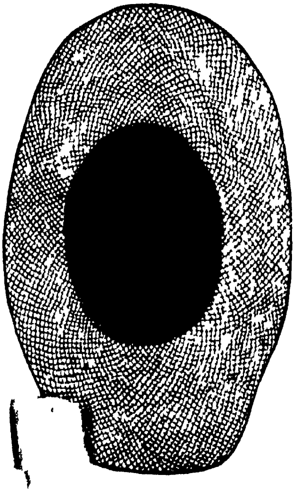

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N Annandale, On the Fresh-water Fauna of India

14. Indian Logic as preserved in Tibet.

By Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa,
M.A., M.R.A.S.

On an examination of some volumes of the Tibetan Block Prints brought down to Calcutta by the late Tibet Mission, and of two volumes of the Hodgson collection, graciously lent to me by Mr. F. W. Thomas of the India Office London, I have come across twenty-five Indian Buddhist works on Logic in faithful Tibetan translations. The following pages give a short account of these twenty-five works that were composed in India between 400—1200 A.D. With the exception of Nos. 11 and 13, the Sanskrit originals of which were, under unique circumstances, discovered among the palm-leaf manuscripts preserved in the Jain temple of Śāntināth, Cambay, these works are no longer available in India or Nepal and were probably destroyed on the decline of Buddhism here. But they have been carefully preserved in Tibet in literal translations. These translations, of which I have appended a brief notice, are most valuable, as they will throw a flood of light on the development of Logic in India and will serve as connecting links between the ancient Nyāya of Gotama about 500 B.C. and the modern Nyāya of Gaṅgeśa Upādhyāya in 1400 A.D. They, moreover, show that Logic was cultivated not in Mithilā and Nadia alone, but also as far as in Kāśmīra in the north, in Andhra in the south and Nālandā in Madhyadeśa.

1. *Pramāna-samuccaya* [1] (Tibetan: Tshaḏ-ma-kun-las̱-ḇtus-pa, meaning "a collection of proofs" in verse) by Dignāga (Tib.: Phyogs̱-kyi-glaṅ-po).

The work which consists of 13 leaves (leaf 1—13) of the Tangyur, m̱do, ce, begins with an invocation to Buddha and is divided into six chapters which are named, respectively, as follows:—(1) pratyakṣa, Tib.: m̱ṅon-sum, or sense-perception; (2) svārthānumāna, Tib.: raṅ-don-gyi-ṟje-ḏpag, or inference for one's own self; (3) parārthānumāna, Tib.: gshan-gyi-don-gyi-ṟje-ḏpag, or inference for the sake of others; (4) tri-rūpa-hetu, Tib: tshul-sum-gtan-tshigs̱, or three phases of the middle term, and upamāna-khaṇḍana, Tib.: ḏpe-daṅ-ḏpe-ltar-s̱nan-pa, or "comparison, that is, recognition of a thing from the perception of a similar thing, is no separate proof"; (5) śabdānumāna-nirāsa, Tib.: s̱gra-ṟje-ḏpag-min, that is, "word or testimony is no separate proof"; and (6) nyāyāvayava, Tib.: rigs̱-paẖi-yan-lag, or parts of a syllogism.

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[1] Probably the same as "The Śāstra on the grouped inferences" *Vide* I-tsing edited by Takakusu p. 187.

Dignāga, who compiled this work named *samuccaya*, is described in the concluding lines to be the vanquisher of opponents in all quarters and to be as strong as an elephant.[1]

The work was translated into Tibetan by an Indian sage named Svarṇāyudha, Tib.: Ģser-gyi-go-cha, of the monastery of Śeṣ-paẖi-ḏge-gnaṣ (place of knowledge and virtue) and a Tibetan interpreter named Daḏ-paẖi-seṣ-rab (of faithful wisdom).

2. *Pramāṇa-samuccaya-vṛtti* (Tib.: Tshaḏ-ma-kun-laṣ-ḇtuṣ paẖi-ẖgrel-wa)—a commentary in prose on work No. 1 by Dignāga himself. It extends over 83 leaves (leaf 13—96) of the Tangyur, m̱do, ce, and is divided into six chapters corresponding to those of the original text. Led on by the command of Mañjunātha (the god of learning) Dignāga, the great disputant of sharp intellect, wrote this commentary. His śāstra is as deep as the ocean.[2]

The commentary was translated into Tibetan, at the command of the king Rigṣ-ḻdan-ṟgyal-po, by the famous Indian sage Vasudhara-rakṣita, who was, as it were, the crest-gem of logicians, and the Tibetan interpreter Sha-ma-ḏge-ḇsñen-señ-ṟgyal.[3]

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[1] ཕྱོགས་རྣམས་ཀུན་གྱི་ཕས་ཀྱི་རྒོལ་བ་རྣམས།།
འཇོམས་པར་བྱེད་ལ་གླང་པོའི་སྟོབས་ལྡན་པ།།
ཕྱོགས་ཀྱི་གླང་པོའི་གཞུང་ཀུན་ལས་བཏུས་པ།།

(Tangynr, m̱do, ce, leaf 13).

[2] ཚད་མ་ཀུན་ལས་བཏུས་པའི་འགྲེལ་བ་རྩོད་པ་ཆེན་པོ་ཤིན་ཏུ་ཕྲ་བའི་ཐུགས་མངའ་བ་སློབ་དཔོན་ཕྱོགས་ཀྱི་གླང་པོས་མཛད་པ་རྫོགས་སོ།། ·····འཇམ་པའི་མགོན་པོའི་བཀས་བསྐུལ་ཕྱོགས་ཀྱི་གླང་པོའི་བསྟན་བཅོས་རྒྱ་མཚོ་ལྟར་ཟབ་འདི།།

(Tangyur, m̱do, ce, leaf 96).

[3] རིགས་ལྡན་རྒྱལ་པོའི་བཀས་བསྐུལ་ནོར་འཛིན་བསྲུང་བ་(རྒྱ་གར་གྱི་མཁན་པོ་རིགས་པ་སྨྲ་བའི་གཙུག་གི་ནོར་བུར་གྲགས་པ་) བ་སུ་དྷ་ར་ར་ཀྵི་ཏ་དང་། བོད་ཀྱི་ལོ་ཙཱ་བ་ཞམ་དགེ་བསྙེན་སེང་རྒྱལ་གྱིས་བསྒྱུར་ཅིང་ཞུས་ཏེ་གཏན་ལ་ཕབ་པའོ།།

(Tangyur, m̱do, ce, leaf 96).

3. *Pramāṇa-samuccaya-vṛtti* (Tib.: Tshaḏ-ma-kun-las̱-ḇtus̱-paẖi-ẖgrel-wa)—a commentary in prose on No. 1 by Dignāga himself. It seems that the Sanskrit originals of Nos. 2 and 3 were identical though the Tibetan versions are different. It extends over 84 leaves of the Tangyur, m̱do, ce (leaf 96—180) and begins with an invocation to Buddha. At the end of the 6th chapter it is stated that the commentary was translated into Tibetan by the Indian sage Svarṇāyudha, Tib: Ģser-gyi-go-cha (in the monastery of S'i-waẖi-ḏge-g̱nas̱) and the Tibetan interpreter Daḏ-pa-śes̱-rab.

4. *Viśālāmalavatī-nāma-pramāṇa-samuccaya-ṭīkā* (Tib.: Yaṅs̱ pa-daṅ-dri-ma-meḏ-pa-daṅ-ḻdan-pa-shes̱-bya-waẖi-tshaḏ-ma-kun-las̱-ḇtus̱-paẖi-ẖgrel-ḇśaḏ)—a comprehensive commentary in prose on No. 1 by Jinendrabodhi (Tib: Ṟgyal-ḏwaṅ-blo-gros̱). It extends over 359 leaves of the Tangyur constituting the volume *re* of section m̱do. It begins with an invocation to Buddha and ends with stating that Jinendrabodhi, the commentator, was a venerable countryman of the Bodhisattva. The commentary was translated into Tibetan by the Tibetan interpreter Ṟdo-rje-ṟgyal-m̱tshan with the assistance of the interpreter Ḏge-s̱loṅ-ḏpal-ḻdan-ḇlo-gros.

5. *Nyāya-praveśo-nāma-pramāṇa-prakaraṇa*[1] (Tib.: Tshaḏ-ma-rigs̱-par-ẖjug-paẖi-s̱go-shes̱-bya-waẖi-rab-tu-byeḏ-pa)—a treatise on proofs in verse named "an entrance to logic" by Dignāga. It extends over five leaves of the Tangyur, m̱do, ce (leaf 183—188), and begins with an invocation to Mañju-śrī-kumāra-bhūta. It was translated into Tibetan by the great Kāśmīrian Paṇḍita Sarvajña-śrī-rakṣita (Tib.: Thams̱-caḏ-m̱khyen-ḏpal-ḇsruṅ) and the famous S'ākya Bhikṣu Ṟgyal-m̱tshan-ḏpal-ḇzaṅ, in the great Sa-s̱kya monastery.

6. *Pramāṇa-śāstra-praveśa* (Chinese: Ga-yen-miṅ-gshaẖ-cin-liẖi-lun, Tib.: Tshaḏ-maẖi-ḇstan-ḇcos̱-rig-pa-la-ẖjug-pa)—"an entrance to the science of proofs" in verse by Dignāga. It consists of five leaves (leaf 188—193) of the Tangyur, m̱do, ce, and begins with an invocation to Mañju-ghoṣa. The original text, which had been written in Sanskrit verse by Dignāga, was translated into Chinese by the Chinese interpreter Tha-saṁ-tsaṅ. The Chinese version was translated into Tibetan by the Chinese scholar Ḏge-śes̱-siṅ-gyaṅ and the Tibetan monk s̱ton-gshon, in the Sa-s̱kya monastery.

7. *Hetu-cakra-hamaru*[2] (Tib: Ģtan-tshigs̱-kyi-ẖkhor-lo-g̱tan-la-ḏwab-pa)—"establishment of the wheel of reasons" in verse by Dignāga. It consists of only one leaf of the Tangyur, m̱do, ce (leaf 193—194) and begins with an invocation to Mañju-śrī-kumārabhūta, as well as to the Omniscient Buddha, the destroyer of the net of errors. The subject of the treatise is the

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[1] Probably the same as Nyāya-dvāra-śāstra (Bunyiu Nanjio, Nos. 1223, 1224). *Vide* I-tsing, edited by Takakusu, p. 186.

[2] Probably the same as Prajñapti-hetu-saṃgraha śāstra. *Vide* I-tsing, edited by Takakụsu, p. 187.

ninefold relation that exists between the middle term and the major term. It was translated into Tibetan by the sage Bodhisattva of Za-hor and the Bhikṣu Dharmāśoka.

8. *Pramāṇa-vārtika-kārikā* (Tib.: Tshaḏ-ma-ṟnam-ẖgrel-gyi tshig).—"memorial verses on the explanation of proofs," by Dharmakīrti. It extends over 64 leaves (194*b*—258*b*) of the Tangyur, m̱do, ce, and begins with an invocation to Mañju-śrī-kumārabhūta. The four chapters, into which the work is divided, are styled as follows:—(1) svārthānumāna, Tib.: raṅ-gi-don-ṟjeṣ-su-ḏpag-pa, or inference for one's own self; (2) pramāṇa-siddhi, Tib.: tshaḏ-ma-grub-pa, or establishment of proofs; (3) pratyakṣa, Tib.: m̱ṅon-sum, or sense-perception; and (4) parārthānumāna, Tib: g̣shan-gyiṣ-don-gyi-tshig, or words for the sake of others. The work concludes by stating that it was written by the great sage Śri-Dharmakīrti [1] who was unrivalled and whose fame and renown filled the earth.[2] It was translated into Tibetan by the Indian sage Subhūti-śrī-śānti and the Tibetan interpreter Ḏge-waẖi-ḇlo-groṣ.

9. *Pramāṇavārtika-vṛtti* (Tib.: Tshaḏ-ma-ṟnam-ẖgrel-gyi-ẖgrel-wa)—an explanatory commentary on Pramāṇa-vārtika (No. 8) by Dharmakīrti. It extends over 115 leaves (leaf 420—535) of the Tangyur, m̱do, ce, and begins with an invocation to the Omniscient Buddha. In the concluding lines [3] Dharmakīrti is described as a great teacher and dialectician, whose fame filled all quarters and on the earth who was, as it were, a lion pressing down the head of elephant-like debaters.

10. *Pramāṇa-viniścaya* (Tib.: Tshaḏ-ma-ṟnam-par-ṉeṣ-pa)—"determination of proofs" by Dharmakīrti. It extends over 88 leaves (leaf 259—347) of the Tangyur, m̱do, ce, and begins with an invocation to Mañju-śrī-kumārabhūta. The three chapters into which it is divided are named respectively as follows:—(1) Pratyakṣa-sthāpana, Tib.: m̱ṅon-sum-gtan-la-ḏwab-pa, or

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[1] Dharmakīrti is further described in the concluding lines of the Pramāṇavārtikakārikā to have been born in *Yul-lho-phyogs*, or Southern India.

[2] སྙན་པའི་གྲགས་པས་སའི་སྟེང་མ་ལུས་པ་ཁྱབ་པ། འགྲན་ཟླ་མེད་པའི་མཁས་པ་ཆེན་པོ་དཔལ་ཆོས་ཀྱི་གྲགས་པས་མཛད་པ་རྫོགས་སོ།

(Tangyur, m̱do, ce, leaf 258).

[3] རིགས་པ་ཆེན་པོ་སའི་སྟེང་མ་ལུས་པ་ཅན་སྨྲ་བའི་གླང་པོ་ཆེའི་སྤྱི་བོ་གནོན་པར་མཛད་པའི་སེང་གེ། ཕྱོགས་མ་ལུས་པར་སྙན་པར་གྲགས་པ་ཅན་དཔལ་སློབ་དཔོན་ཆོས་གྲགས་སྦྱར་བ།

(Tangyur, m̱do, ce, leaf 535 *a*)

establishment of sense-perception; (2) svārthānumāna, Tib.: ran-gi-don-gyi-rjes-su-dpag-pa, or inference for one's own self; and (3) parārthā-numāna, Tib: gshan-gyi-don-gyi-rjes-su-dpag-pa, or inference for the sake of others. In the concluding lines Dharmakīrti is described as a great sage of unrivalled fame.[1] The work was translated into Tibetan by the Kāśmirian Paṇḍita Parahitabhadra (Tib.: Gshan-la-phan-pa-bzaṅ-po) and the Tibetan interpreter Blo-ldan-śes-rab in the matchless city of Kāśmīra.

11. *Nyāyabindu-nāma-prakaraṇa* (Tib.: Rigs-pahi-thigs-pa-shes-bya-wahi-rab-tu-byed-pa)—" a treatise named a drop of logic" by Dharmakīrti. It consists of eight leaves (leaf 347—355) of the Tangyur, mdo, she, and begins with an invocation to Mañju-śrī-kumārabhūta. The three chapters into which it is divided are named, respectively, as follows:—(1) pratyakṣa, Tib.: mṅon-sum, or sense-perception; (2) svārthānumāna, Tib.: bdag-gi-don-gyi rjes-su-dpag-pa, or inference for one's own self, and (3) parārthānumāna, Tib.: gshan-gyi-don-rjes-su-dpag-pa, or inference for the sake of others In the concluding lines it is stated that " Dharmakīrti vanquished the Tīrthikas without exception in the manner as Śākyamuni had subdued the large army of Māra; and as the sun dispels darkness, the Nyāyabindu has exterminated the Ātmaka theory (that is, the Tīrthika doctrine)—Wonderful!"[2]

12. *Nyāyabindu-ṭīkā* (Tib.: Rigs-pahi-thigs-pa-rgya-cher-hgrel-wa)—" a detailed explanation of Nyāyabindu (No. 11)" by Vinītadeva (Tib.: Dul-wahi-lha). It extends over 43 leaves (leaf 1—43a) of the Tangyur, mdo, she, and begins with an invocation to Mañju-śrī-kumārabhūta. The work was translated into

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[1] Dharmakīrti was born in Southern India.

ཡུལ་ལྷོ་ཕྱོགས་ཀྱི་རྒྱུད་དུ་བྱུང་བ།

[2] ཤཱཀྱ་ཐུབ་པས་བདུད་ཀྱི་སྡེ་བོ་ཆེ།།
ཆོས་ཀྱི་གྲགས་པས་མུསྟེགས་མ་ལུས་པ།།
ཉི་མས་སྨག་རུམ་རིགས་པའི་ཐིགས་པ་ཡིས།།
བདག་གི་ལྟ་བ་དྲུངས་ཕྱུང་ངོ་མཚར་ཉིད།།

(Tangyur, mdo, she, leaf 43).

The reading དམག in the third line of the above verse reproduced in the excellent Russian edition of the Tibetan Nyāyabindu (by F. J. Sherbatski) seems to be a mistake for སྨག།

Tibetan by the Indian sage Jinamitra and the interpreter of Shu-chen named Vande-ye-śes̱-s̱de.

13. *Nyāyabinduṭīkā* [1] (Tib.: Rigs̱ paẖi-thigs̱-paẖi-ṟgya-cher-ẖgrel-wa)—"a detailed explanation of Nyāyabindu (No 11)" by Dharmottara (Tib.: Chos̱-m̱chog). It extends over 63 leaves (leaf 43—106) of the Tangyur, m̱do, she, and begins with an invocation to Mañju-śrī-kumārabhūta. It was translated into Tibetan first by the Indian sage Jñānagarbha and the interpreter of Shu-chen named Gelong Dharmāloka, and afterwards neatly by the Indian sage Sumati-kirti and the Tibetan interpreter Gelong Blo-ḻdan-śes̱-rab, who obtained a copy of the work from the Middle Country (that is, Magadha).

14. *Nyāyabindu-pūrvapakṣe-saṃkṣipta* (Tib.: Rigs̱-paẖi-thigs̱ paẖi-phyogs̱-s̱ṅa-ma-m̱dor-ḇs̱dus̱-pa)—a summary of the objections to (or criticisms on) Nyāyabindu, by Kamala-śīla of wide fame. It extends over nine leaves (leaf 106—115) of the Tangyur, m̱do, she, and begins with an obeisance to the Supreme Blessed one. It was translated into Tibetan by the Indian sage Viśuddha-siṅ and the interpreter of Shu-chen named Gelong Ḏpal-ṟtsegs̱-rakṣita.

15. *Nyāyabindu-piṇḍārtha* [2] (Tib.: Rigs̱-paẖi-thigs̱-paẖi-don-ḇs̱dus̱-pa)—"the purport of Nyāyabindu" by Jinamitra. It consists of one leaf only (leaf 115—116) of the Tangyur, m̱do, she, and begins with an invocation to Mañju-śrī-kumārabhūta. It was translated into Tibetan by the Indian Teacher Surendrabodhi and the interpreter of Shu-chen named Vande-ye-śes̱-s̱de.

16. *Hetubindu-nāma-prakaraṇa* (Tib.: G̱tan-tshigs̱-kyi-thigs̱-pa-shes̱-bya-waẖi-rab-tu-byeḏ-pa)—"a treatise on a drop of reason" by Dharmakīrti. It extends over 20 leaves (leaf 355—375) of the Tangyur, m̱do, ce, and begins with an invocation to Buddha. The three chapters, into which it is divided, treat respectively of the following:—(1) svabhāva, Tib.: raṅ-ḇshin-gyi-gtan-tshig-kyi s̱kabs̱, or the relation of identity between the reason (that is, middle term) and the major term; (2) kārya, Tib.: ẖbras̱-buẖi-gtan-tshigs̱, or the relation of effect and cause between the middle term and the major term; and (3) anupalabdhi, Tib.: mi-ḏmigs̱-paẖi-gtan-tshigs̱, or the relation of non-perception between the middle term and the (heterogeneous) major term.

17. *Hetubindu-ṭīkā* (Tib.: G̱tan-tshigs̱-kyi-thigs̱ pa-ṟgya-cher-ẖgrel-wa)—"a detailed explanation of Hetubindu" by Vinīta-

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[1] The Tibetan version of Nyāyabinduṭīkā by Dharmottara, together with the Nyāyabindu by Dharmakīrti has been edited by F. J Sherbatski and published in the St. Petersburg Bibliotheca Buddhica series, 1904.

The Sanskrit version of the Nyāyabinduṭīkā by Dharmottara, together with Nyāyabindu, was edited by Prof. P. Peterson and published in the Bibliotheca Indica series, Calcutta, 1889

[2] The original reading is: "Nyāyabindu-paṇḍirthā." which may also be restored as "Nyāyabindu-piṇḍārtha or Nyāyabindu-piṇḍitārtha." The meaning, according to the Tibetan version, is:—"the abridged meaning of Nyāyabindu."

deva (**Tib.**: **Dul-waẖi-lha**). It extends over 89 leaves (leaf 116—205) of the Tangyur, mdo, she, and begins with an invocation to Buddha. It is divided into three chapters, corresponding to those of the original No. 16. It was translated into Tibetan by the Indian teacher Prajñā-varma and the interpreter of Shu-chen named Gelong D̲pal-b̲rtsegs-rakṣita.

18. *Hetubindu-vivaraṇa* (Tib.: G̲tan tshigs-thigs-paẖi-ẖgrel-wa)—"an exposition of the Hetubindu" by the Brahman Acita.[1] It extends over 170 leaves (leaf 205—375) of the Tangyur, mdo, she. and begins with an invocation to Bhagavān Vajradhara (Tib: B̲com-ldan-ẖdas-r̲do-r̲je-ẖchaṅ-wa). It is divided into four chapters treating respectively of :—(1) svabhāva, Tib.: raṅ-bshin, or relation of identity; (2) kārya, Tib.: ẖbras-bu, or relation of effect and cause; (3) anupalabdhi, Tib.: mi-d̲migs-pa, or relation of non-perception; and (4) Ṣaḍ-lakṣaṇa-vyākhyā, Tib: m̲tshan-ñid drug-b̲śad̲-pa, or explanation of six characteristics. The work concludes thus: "In the city of Kāśmīra, the pith of Jambudvīpa, the commentary of Dharmakīrti who was the best of sages, was translated. From this translation of Pramāṇa, the pith of holy doctrines, let the unlearned derive wisdom."[2]

19. *Tarka-nyāya-nāma-prakaraṇa*[3] (Tib.: R̲tsod̲-paẖi-rigs-pa-shes-bya-wa-rab-tu byed̲ pa)—"a treatise on logical disputation" by Dharmakīrti. It extends over 32 leaves (leaf 384—416) of the Tangyur, mdo, ce, and begins with an invocation to Mañju-vajra (Tib: H̲jam-paẖi-r̲do-r̲je). It was translated into Tibetan first by the great Indian sage Jñāna-śrī-bhadra[4] and the Tibetan interpreter Gelong D̲ge-waẖi-b̲lo-gros. Subsequently, the translation was retouched by the great Paṇḍita Dīpaṅkara and the interpreter Gelong Dar-ma-grags.

20. *Ālamabana-parīkṣā*[5] (Tib.: D̲migs-pa-b̲rtag-pa)—"an examination of the objects of thought" in verse by Dignāga. It consists of one leaf only (leaf 180) of the Tangyur, mdo, ce, and begins with an invocation to Buddha and all Bodhisattvas.

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[1] Written variously as ' Acita." " Atsnṭa " and " Atsata."

[2] འཛམ་གླིང་སྙིང་པོ་ཁ་ཆེའི་གྲོང་ཁྱེར་དུ།།
མཁས་པའི་སྙིང་པོ་ཆོས་ཀྱི་གྲགས་པའི་འགྲིལ།།
དམ་ཆོས་སྙིང་པོ་ཚད་མ་བསྒྱུར་བ་ལས།།
སྙིང་པོ་མེད་པ་རྣམས་ཀྱི་སྙིང་པོར་ཤོག།

(Tangyur mdo, she. leaf 375(*a*)).

[3] The original reads: *Tsota* for *Tarka*. The Tibetan equivalent is r̲tsod̲-pa, meaning "disputation"

[4] For *bhadra* the original reads: *badha*. Probaby same as No. 1173 (Bunyiu Nanjio).

[5] **Ālambana = Ārambaṇa.**

21. *Ālambaṇa-parīkṣā-vṛtti* (Tib.: D̲migs̲-pa-b̲rtag-pah̲i-h̲grel)—a "commentary on Ālambaṇa-parīkṣā (No. 20)," by Dignāga himself. The work consists of two leaves only (leaf 180—182) of the Tangyur, m̲do, ce.

22. *Trikāla-parīkṣā* (Tib.: Dus̲-gsum-b̲rtag-pa)—"an examination of three times" by Dignāga. It consists of one leaf (leaf 182*a*—183*b*) of the Tangyur, m̲do, ce, and was translated into Tibetan by the great Paṇḍita Śantakara-gupta and the interpreter Gelong Tshul-khrims̲-r̲gyal m̲tshan.

23. *Santānāntara-siddhi* (Tib : R̲gyud̲-gshan-grub-pa)—"establishment of the continuity of succession (of momentary ideas)" by Dharmakīrti. It consists of four leaves (leaf 416—420) of the Tāngyur, m̲do, ce, and begins with an invocation to Mañju-śrī-kumārabhūta.

24. *Sambandhaparīkṣā-prakaraṇa* (Tib.: H̲brel-wa-b̲rtag-pah̲i rab-tu-byed̲-pa)—"a treatise on connection (of the sense-organs with the objects of sense)" by Dharmakīrti. It consists of two leaves only (leaf 375*b*—377*a*) of the Tangyur, m̲do, ce, and begins with an invocation to Mañju-śrī-Kumārabhūta. It was translated into Tibetan by the Indian teacher Jñānagarbha and the interpreter Vande-nam-m̲khas̲.

25. *Sambandhaparīkṣā-vṛtti* (Tib.: H̲grel-wa-b̲rtag-pah̲i-h̲grel-wa)—"a commentary on Sambandhaparīkṣā (No. 24)" by Dharmakīrti. It extends over seven leaves (leaf 377*a*—384*a*) of the Tangyur, m̲do, ce, and begins with an invocation to Mañjughoṣa.

15. Note on the Diet of Tea Garden Coolies in Upper Assam and its Nutritive Value.

By HAROLD H. MANN, D.Sc.

In the past few years quite a large number of investigations have been undertaken by Church, Leather, Hooper and others with regard to the composition of the foods commonly used by the people of India. Little, if anything, however, has been done to ascertain, not the value of individual foodstuffs, but that of the diet of which they form a part, except with regard to the minimum required. This last has been worked out with considerable thoroughness in connection firstly with jails, and secondly with famine conditions. It seems, however, that a knowledge of the food value of Indian diets, not under special conditions like those of famine or scarcity, but in the regular course of daily life, will be of considerable value, and the present is a preliminary note designed to introduce the subject to the notice of those who are interested in the question, and to enable me to ask for coperation in extending dietary studies to a large number of the races, castes, and groups living in India.

The fact that I have been able to get together the details which follow is due to the system under which the coolies are employed in Upper Assam. It is very important that every coolie who *can* work should be kept in condition for work, and hence it is customary when any man or woman is noticed to be becoming weak, anaemic, and unfit to do the regular daily task, to provide, under the supervision of the garden doctor, properly cooked food for them at what is called a 'hotel,' to which they go, obtain and eat their rations before going to work in the morning and after returning from work in the evening. The existence of this so-called 'hotel' enabled me to obtain exact information as to the nature of the diet, which was regarded as sufficient and suitable by the coolies, and which was closely similar to that which they provided for themselves under normal conditions. It has been found that the coolies usually improve in health under the diet of which I now give the amount and composition.

I have obtained data from two very large properties on the Sadiya Road in Upper Assam. The figures are, however, so closely similar that one set of figures will be quite enough to represent the facts. It must be noticed, however, that the amount of food calculated for men and women is the same, whereas in Europe and America it is customary in similar studies to only allow a woman four-fifths of the quantity provided for man. This is explained by the fact that in Assam, during a large part of the year, both women and men are doing similar work, and hence will require the same nutritive material. A child is reckoned, on the average, as consuming half the food required for a man.

This being the case, the ration allowed per adult man or woman per day is as follows:—

Rice	... 14	chitaks	or	815	grammes.
Dal	... 2	,,	,,	115	,,
Salt	... ⅓	,,	,,	19	,,
Spices	... $\frac{1}{16}$	,,	,,	3½	,,
Oil	... ⅛	,,	,,	7½	,,
Potatoes	... 2	,,	,,	115	,,
Onions	... ¼	,,	,,	14½	,,

The elements of this diet, as used, need some description.

Rice.—The rice normally employed is that known on the Calcutta market as coolie rice of the quality 'Kazla No. 1.' Occasionally, and on some gardens, the lower priced 'Kazla No. 2' is employed, but this is not usual in Upper Assam. It is a brown or red rice, containing a considerable proportion of the inner coats of the husk attached to the grain, and is hence richer as a nutritive material than if polished white. One occurrence which has come under my notice illustrates this. A tea company recently obtained a higher type of rice, known on the Calcutta market as 'Jhabra,' for their coolies. This was white and polished, but shortly afterward the coolies complained of it as not being as satisfying as the commoner grade. A higher grade rice is employed in the hospitals known as 'Kalchitu.' Analysis of samples of Kazla No. 1 and Kalchitu rice gave the following figures:—

	Kazla No. 1.	Kalchitu Rice.
	%	%
Moisture ...	7·75	5·75
Oil ...	1·11	1·53
*Albuminoids ...	8·25	10·06
Carbohydrates, &c.	81·22	81·46
Crude Fibre ...	·15	·10
†Ash ...	1·52	1·10
	100·00	100·00
*Containing Nitrogen	1.32	1.62
†Containing Sand	·56	·11

All the water in which the rice is cooked is eaten with it, so that the nutritive value actually absorbed is that above given.

Dal.—The Dal, the principal source of nitrogen in the food of the people of Eastern Bengal and Assam, in the present case consisted of equal proportions of *Arhar* (Cajanus indicus) and *Masuri* (Lens esculenta). Both of these are leguminous seeds of very considerable nutritive value. Both are grown, in small quantities, in the neighbourhood of the garden where these were used, but by far the greater amount is imported from Bengal. On analysis they gave the following figures :—

	Arhar Dal.	Masuri Dal.
	%	%
Moisture ...	8·50	5·66
Oil ...	3·03	1·02
*Albuminoids ...	24·69	25·12
Carbohydrates, &c.	62·57	65·37
Crude Fibre ...	1·79	·39
†Ash .	4·42	2·44
	100·00	100·00
*Containing Nitrogen	3·95	4·02
†Containing Sand	·21	·29

During the present season (1906) the prices of both rice and *dal* have been extraordinarily high, ranging in May, when these data were obtained, from five to six rupees per maund for rice, and from four to five rupees per maund for either of the above dals. In the present instance, however, rice was always supplied at Rs. 3 per maund under the Inland Emigration Act under which the coolies are taken to Assam.

Spices.—These consist of a mixture of Black pepper, Caraway and Coriander, which gave on analysis the following figures :—

	Black pepper.	Caraway.	Coriander.
	%	%	%
Moisture ...	6·76	6·48	4·21
Oil ...	7·86	14·35	17·68
Albuminoids ...	13·69	19·25	15·19
Carbohydrates ...	56·66	40·54	37·31
Crude Fibre ...	9·77	7·55	14·63
Ash ...	5·26	11·83	10·98
	100·00	100·00	100·00
Containing Nitrogen	2·19	2·67	3·18
Containing Sand ...	·20	3·08	2·42

Mustard Oil.—All the fatty matter employed in cooking and eating these rations is in the form of oil from Mustard or Rape (*Brassica* sp.), a seed very extensively cultivated in the Assam valley. *Ghi* or clarified butter is not used there.

Vegetables.—The garden, where the results under discussion were obtained is situated in a district where potatoes are grown in large quantities. The onions shown in the ration are replaced as necessary by other vegetables, potherbs and whatever is obtainable of a similar sort. It was impossible to submit the potatoes or onions to analysis at the time, and I could not keep them. In calculating nutritive value of the diet I have, therefore, used the following figures, which will be certainly very close to the actual fact:—

	Potatoes. %	Onions. %
Oil	... ·15	·15
Albuminoids ...	... 1·99	1·60
Carbohydrates, etc.	... 20·86	11·00

Combining all the analyses given it will be seen that the daily ration as set out will contain the following maximum weights of nutritive materials:—

	Albuminoids. Grammes.		Fat. Grammes.		Carbohydrates. Grammes.		Fuel Value. Calories.
Rice	67·2	...	9·0	...	661·9	...	3073
Dal	28·7	...	2·8	...	73·6	...	441
Spices	·6	...	·5	...	1·6	...	14
Oil	...	...	7·5	...	...	...	70
Potatoes	2·3	...	·2	...	24·1	...	110
Onions	·2	...	0·2	..	1·6	...	8
Total	99·0	...	19·52	...	762·8	...	3716

In Europe the minimum food value of the diet necessary for the maintenance of physical health and efficiency has been laid down by numerous observers, and in recent years a very close agreement has been reached among investigators in Europe and America. The best figures are, undoubtedly, those of Atwater in America[1] which follow. In accordance with modern ideas of the replaceability of various food constituents, only the albuminoids (protein) and Fuel-value are indicated, it being considered of minor importance whether the latter be obtained from albuminoids, carbohydrates or fats.

	Albuminoids. Grammes.	Fuel value. Calories.
Man with little physical exercise	100	2700
Man at light physical work	112	3000
Man at moderate physical work	125	3500
Man at active, hard physical work	150	4500

The figure obtained for the diet under discussion is, it will be seen, equivalent in albuminoids to that of Atwater's standard of a man with little physical exercise only. In the present instance the work done would be comparable at least with Atwater's 'moderate work' standard, and is probably higher. If we argue direct from these figures, the standard of our Assam coolie diet is very deficient in albuminoids, but not otherwise a low one.

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[1] Investigations in the Chemistry and Economy of Food by W. O. Atwater, U.S. Department of Agriculture, Bulletin No. 21.

But it seems that we are not justified in so calculating. On the whole a man of the coolie classes, which in the district we are considering are chiefly composed of Mundas, Oraons and other Chota-Nagpur tribes, is considerably lighter in weight than a European or an American. Hence the amount necessary for maintenance, as distinguished from energy expended in work, will be less than that required in America. What correction should be, however, introduced on this account is unknown. The correction, in terms of food, necessary to bring the food value under the higher temperature conditions of India into relationship with that of America or Europe is also quite unknown.

I have explained that this is a diet which is given to coolies who are weakly, and it does not hence quite represent that normally consumed by the people. In the first place the amount of rice is greater; a coolie in full work in Assam eats normally about 12 chitaks of rice per day only, or 22 seers 8 chitaks per month of thirty days. In other respects the diet is fairly closely followed except that potatoes are only used at certain times of the year, their place being much more normally taken by potherbs, or other vegetables which are often available. Thus it may be said that the above dietary represents, except in the matter of rice, almost the normal standand of food for a coolie in Upper Assam in respect to quantity. Under usual conditions, however, in their own houses, the coolies only eat one cooked meal each day, this being in the evening. In the morning only parched rice is consumed.

There is only one seriously doubtful factor in the above diet as applied to Upper Assam coolies. This is the amount of fish which may be obtained. I am assured, however, that among tea garden coolies, for by far the greater part of the year, the amount is negligible. Milk is not used, nor *ghi.*

The actual cost of the diet I have given above per head per month will alter very considerably with the time of year and the circumstances. The present year has, even apart from rice (which as I have said is by law supplied at Rs. 3 per maund), been one of notoriously high prices. Though not perhaps of the same permanent value as the remainder of the figures, it may be interesting to give the prices at which the materials were actually bought in the bazar at the time the present notes were made. They were as follows:—

	Rs.	A.	P.	
Dal (both kinds) ...	4	12	0	per maund.
Salt	3	13	0	,,
Spices	0	6	0	per seer.
Mustard Oil ...	18	0	0	per maund.
Potatoes	3	8	0	,,
Onions	3	13	0	,,

At these prices and rice at Rs. 3 per maund, the cost of a man's diet per month in May 1906 would be :—

	Rs.	A.	P.
Rice ...	1	15	6
Dal ...	0	7	2
Salt ...	0	1	0
Spices ...	0	1	0
Mustard Oil ...	0	2	0
Potatoes ...	0	5	3
Onions ...	0	0	8
TOTAL ...	3	0	7

A family of man, wife and three children, which is usually considered a normal one, will require for the 'hotel' diet here described, a minimum of Rs. 10-10-0 per month in order to provide it, under the conditions of prices prevailing during the early summer of 1906.

16. Introduction of written language in Mongolia in the Thirteenth Century.

By *Rai* SARAT CHANDRA DAS, *Bahadur*, C.I.E.

The Tartar Conqueror, Chinghis Khan, at the age of 45, invaded Tibet with his hordes in the year 1202-3 A.D. At this time Tibet was divided into several petty independent states under rulers called *Desrid* and chiefs called *Deba.* There were also a few Buddhist hierarchies in Û and Tsang which flourished under the protection of the rulers of those provinces. When Chinghis entered the country with his invincible hordes, the Tibetan chiefs did not unite together in a body to oppose the invader, but on the contrary welcomed him. *Desrid Joyah* of Û and *Kundor* of the province of Tshal-wa received him with royal honours. So, practically the Tibetans presented their country[1] to the conqueror Chinghis Khan, who after fully establishing his supremacy over Tibet, is said to have returned to Mongolia. He sent messengers, with a letter of invitation, to Lama Kungah Ñiṅ-po, the hierarch of the monastery of Sakya, in Tsang, asking him to visit Mongolia (Hor) with his spiritual son, for the purpose of introducing the religion of Buddha in Mongolia. Although the Lama had not obtained a personal interview with the Conqueror during his stay in Tibet, yet, it is stated, that a kind of spiritual relation had been established between the two parties from a distance; and revenues of Tibet were appropriated to religious services and to the support of the Buddhist clergy of Û and Tsang by the permission of the Conqueror.

From this circumstance, the Tibetan historians have thought it fit to give Chinghis Khan a place among the Dharma Raja (Buddhist kings), though it is doubtful if the Conqueror himself ever cared for it.

After Chinghis's death, his grandsons, princes Guyug and Gutan, at their mother's advice, proceeded with their followers to Çar Thala in northern Shin-ñing and at first ruled there. From Çar Thala they extended their dominions down to Kham. While they were reigning at Lanchau within the great wall, they sent messengers to Tibet to bring the celebrated Sakya Paṇḍita Kungah Gyal-tshan to Hor. This hierarch of Sakya had, about this time, defeated several Brahminical disputants who had challenged him to prove that Buddhism was superior to the Brahminical creed. Sakya Paṇḍita was versed in the five divisions of Arts. The Mongolian messengers came to Tsang (*i.e.* arrived at Sakya) in the year called *Iron-mouse* of the 4th Cycle. Sakya Paṇḍita had seen a prediction left by Lama Sonam-tse-mo, one of his predecessors, to the effect that an invitation would come to one of his successors, from the Hor, a people that wore hawk-shaped caps and shoes resembling pig's snout. Accordingly, he proceeded to Hor, accompanied by his nephews Phya-gna and Phag-pa.. In the year (*Fire-sheep*) the Lamas came to the Mongolian Court where they had an audience of king Gutan and received royal favours. Sakya Paṇḍita became the king's spiritual tutor, and is said to have performed many miracles and magical exhibition of his occult powers. At the wish of the king to introduce writing for the use of his people, and particularly that they might be trained in the Buddhist religion, Sakya Paṇḍita designed the Mongolian character, to suit the tongue of the Hor people. He shaped the new character after the teeth of a saw, and taught his pupils to write them from top to bottom in the manner of the Chinese writing. The Mongolian tongue was not capable of producing the peculiar tones, half-tones, and quarter-tones which were peculiar to the Chinese. The Mongols, however, were able to pronounce fully all pollysyllabic words.

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[1] It then comprised of Ñaḥri Korsum མངའ་རིས་སྐོར་གསུམ།; Û དབུས།; Tsang གཙང་།; Ru-bshi རུ་བཞི། the four divisions; South Kham ལྷོ་ཁམས།; North Kham and the three Gang སྒང་གསུམ།.

The first series of letters, comprising vowels and consonants and their compounds, which Sakya Paṇḍita had designed, were the following, arranged in groups of three:—

A, e, i; na, ne, ni; pa, pe, pi; ka, ke, khi; ga, ge, gi; ma, me, mi; la, le, li; ra, re, ri; ta, te, ti; tha, the, thi; tsa, tse, tsi; tsha, tshe, tshi; ya, ye, yi; wa, we, wi. These were afterwards increased to 148 letters.

Some Tibetan historians say that the sixth younger brother of the Great Khan (Emperor Khublai) named Torta visited Tibet, at the head of a large army, to consolidate the Emperor's authority over the country. Being struck with the elaborate, religious ceremonies of the Tibetan Lamas, and also being impressed with the importance of the literature of Tibet, he took with him Lama Sakya Paṇḍita to Hor for teaching the Lamaic cult to the Mongols.

During the reign of Mung-khe, in Hor, the *Karmapa* Lamas, under Bakshi, who had established spiritual relations with that monarch, attempted to improve the newly-formed written language of the Mongols, but no appreciable success attended their efforts. It was Lama Phag-pa Lha, the spiritual tutor of Emperor Khublai, who in the year *Iron-horse* framed the square-shaped Mongolian character. After Mung-khe's death, his younger brother, Sechen Khublai (the Great Khan of Marco Polo), who was born in the year *Tree-dog*, succeeded to the throne in the year *Iron-monkey*. He conquered the Jang country, and within the year *Iron-sheep*, established his authority over the whole of China, Mongolia and

Tibet. He built the great fortified cities of Peking, Chuhan, Khura and Thuling-thing. When these great works were done, he invited Lama Phag-pa Lha (Hphags-pa Lodoi Gyal-tshan, in Chinese, called Bash-pa) of Sakya, and appointed him his spiritual tutor. The Empress received the Tantrik initiation of *He Vajra* from him. In consequence of this encouragement the Lamaism of Tibet became introduced in China. The Buddhism of Tibet henceforth came to be known under the name of *Lama*, which was thereby distinguished from the older Buddhism of China followed by the *Hoshangs*. During the reign of Emperor Olgai-thu, Lama Choi Kyi-hod of Sakya, then resident at Peking, finding the square-shaped characters quite unsuited for practical purposes of correspondence, etc., made improvements in the saw-shaped characters by adding tails and diaresis and other marks to the existing letters and thereby adding to their number and giving more powers to them. He, in fact, completed the written language of Mongolia, and taught his pupils to translate religious books in the same from the Chinese and Tibetan.

It is stated that Chinghis, during his lifetime, had appointed his son Oko-te (also written Oga-te) as Viceroy over his Mongol-Chinese Empire with Chu-tsha, a chief of the tribe of Khitan, as prime minister. After the Conqueror's death Oko-te reigned for six years from the *Earth-mouse* year. He was succeeded by his son Gu-yug, who was born in the year *Tree-ox*, and died after a reign of six months, in the year *Water-serpent*. He was succeeded by his younger brother Gotan (who was born in the year *Fire-tiger*) in the year *Tree-horse*. In the following year, when he was attacked with leprosy, Go-tan sent for Sakya Paṇḍit Kungah Gyal-tshan. He responded to the Khan's call, and is said to have cured him of the loathsome disease, by the efficacy of some Buddhist charms, chiefly by reciting the siṃhanāda-sûtra. Both the king and his Lama died in the year *Iron-hog*. Though it is stated that the two brothers Go-yug and Go-tan had succeeded to their father's throne, they only reigned over a part of the empire, having gone towards Thala in the east and extended their sway down to Kham, but the real succession to the Mongol-Chinese Empire had passed to Mung-khe, the eldest of the four sons of Tholo, born in the year *Fire-hare*. He reigned from the year *Water-mouse* to the year *Earth-sheep*.

17. Note on the *Shunqār* Falcon.

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

That the *Shūnqār* of old Persian manuscripts was a species of Jerfalcon, there can, I think, be little doubt. Jerdon, quoting Pallas, says that the word is taken from the Baschkir Tartar name of the Jerfalcon. A footnote in *Falconry in the British Isles* runs:—"We have been informed by travellers that some few *large white falcons*, which must be Greenland falcons, are caught annually on their passing over the Caspian Sea, and that they are highly prized by the falconers of Syria and Persia."

In the *Shāhbāz-Nāma* [1] it is stated that the *Shūnqār* is merely the mountain variety of the Saker Falcon (*itālgū*) which, by long residence in the hills and snows, has increased in size, and that it bears the same relation to the Saker that the sturdy hill-man does to the inhabitant of the plains.

The Emperor Jehangir in his chatty memoirs writes:—"On Sunday the 18th [in the year 1028 A.H., or 1618 A.D.] we marched. At this time the King of Persia had sent by Pari Beg, the *Mīr-Shikār*, [2] a fine *shūnqār* falcon. Another, too, had been given to us by *Khān-i 'Ālam*. [3] The latter with his falcon died on the way. The Royal falcon too, through the carelessness of the *Mīr-shikār*, was mauled by a cat. Although it was brought alive to Our Court, yet it lived no more than a week. How shall I describe the beauty and colouration of this hawk? [4] It had very handsome, black, markings on each wing, [5] and on the back, and on the sides. As it was something out of the common I ordered *Munṣūr*, the painter, who is dignified by the title *Nādir*^{u} *'l-'Aṣr*, to paint and preserve its likeness. I gave a thousand rupees to the *Mīr-shikār* and dismissed him."

In Courteille's '*Dictionaire Turk-Orientale*,' we find:—"شونقار [*shūnqār*], falcon, proprement le gerfaut." Dr. Scully, however, in his Turki vocabulary of birds states that *shūnqār* is the name of "Falco Hendersoni" and *itālgū* ایتالگو of its female. Now amongst the Turks of Persia *itālgū* or *aitālgū* is the name of the Saker Falcon (F. Cherrug), the *Chargh* of India. Further in

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[1] *Shāh-bāz-Nāma* 'vide' Ethé's catalogue of Persian MSS in the India Office Library, Vol. I., p. 1508. The Asiatic Society of Bengal possesses a MS. copy.

[2] *Mīr shikār* is, in India, a courtesy title given to any common bird-catcher, trapper, assistant falconer, etc. In Persia the word signifies a kind of head game-keeper or 'shikari'

[3] *Khān-i 'Ālam* was sent as ambassador to Persia; 'vide' "*Tārīkh-i Hindustān*," Vol. VI., by Maulavi Muhammad Ẕakā 'llah.

[4] *Jānwar*, "animal," in falconers' language means 'falcon or hawk.'

[5] *Bāl*, as here "wing," but also "flight-feather."

Lahore to Yarkand, there is a coloured figure of "Falco Hendersoni," which, for some reason, Mr. Hume assumed to be "the Shanghar of Eastern falconers." If one may judge from the coloured figure, the falcon represented is merely an old bird of the kestril-like variety of Saker, a variety well known to Panjab falconers.[1] In the immature plumage the red markings would be white, and the bird merely a striking example of that variety or race distinguished by falconers of the Kapurthala State as *chītal chargh* and supposed by them to be soft and lacking in courage.

The late Sirdar Sher 'Ali, once Wālī of Kandahar, told the writer that he had kept *shunqārs* in Afghanistan and that he had one that was "pure white like snow"; and Sirdar F. *Muḥammad* Khān of Kabul, who has accompanied H.M. the Amir of Afghanistan on a visit to India, states that "*shūnqārs* are a very large species of *charkh* and that some of them are white."

Dr. Scully has, I think, been misled as regards the names *shunqār* and *italgu*. However, the term *shunqār* has been frequently misapplied by some Eastern writers that write from hearsay and are assisted by a fine imagination.

For further information on the subject the reader is referred to Harting's "*Bibliotheca Accipitraria*," pages 187 and 191.

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[1] The falcon described by Hume was "feathered in front for three-fifths of its length." There appears to be an undescribed variety of F. Cherrug, which has feathers on the tarsus and feet. Amongst Pindi Gheb falconers this variety is known by the name of *Sang-Sang;* while by Derajat falconers it is distinguished by the epithet *pā-moz* (= booted), an epithet applied to pigeons with feathered legs. I have myself never met with this rare variety.

18. Note on the Common Raven—*Corvus Corax.*

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

This bird, so common in the Panjab, is known to Panjabi falconers by the name of *ḍhoḍhar*. In the Murree hills it is called *baṛā qāg͟h*, a name perhaps also applied to the Indian Corby,[1] with which it is confused. Amongst Persians it is commonly known as *kulāg͟h-i siyāh* or "black crow,"[2] but amongst Persian falconers by its Turki name of *quzqūn* or *quzg͟hūn*. *Rang ḍoḍhar ka aur nām 'Mahtāb'*[3] "black as a raven and her name 'Moon,'" is a Hindustani proverb for an ugly woman that gives herself airs, or for things that are incongruous. Arabs call the raven *G͟hurāb^{u} 'l-Bayn* or the "Raven of Separation" because it "separated" itself from Noah and failed to return. Then Noah cursed it for its disobedience, and its colour was changed from white to black, and "its throat was pierced";[4] its feet became deformed[5] and fear of men entered into its heart. Its epithet is *Fāsiq* or "Evil-doer," one of the epithets of Satan. This bird of ill-omen alights on the deserted habitations of men; it mourns like one afflicted: when it sees friends together, it croaks, and its croaking foretells "separation"; and when it sees well-peopled habitations, it announces their ruin and desolation. If it croaks thrice, the omen is evil, but if twice, it is good. *Ibn 'Abbās*, the Prophet's cousin, when he heard it croak, used, in order to avert the ill-omen, to exclaim, "O God! there is no bird but it is Thine; there is no good but Thy good; and there is no God but Thee." Modern Arabs avert the omen by exclaiming, "*K͟hair, khair*, Good, good."

The raven is, in winter, found in large flocks in the deserts of the North-Western Frontier. It breeds largely in the Sulaiman Range, near Dera Ghazi Khan and Dera Ismail Khan, and of course elsewhere. I have observed the nest in the plains close to Dera Ismail Khan city, but resident falconers have told me that only within late years has it taken to breeding there. On a 23rd February I found a nest at Bhakkar with three half-grown young ones and three addled eggs. In May I obtained a young one from the cavalry grass-*rakh* at Kohat, which two months later took to killing full-grown house-pigeons. I have several times seen a wild raven chase and injure a house-pigeon, the pigeon only saving itself by dashing into the bungalow; and I have known one enter a servant's hut by the low door and carry off a pigeon's eggs. I have, too, trustworthy information of three ravens hunting and killing a wild hare.

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[1] The Indian Corby, the *ghagrī kānw* of the Derajat. By the Hindus of Bengal it is considered a messenger of death: "*Sītā Rām*" they say when they hear it croak.

[2] *Kulāg͟h* is the hooded crow, the common crow in southern Persia.

[3] The same as *Likhā na paṛhā nām Muḥammad Fāẓil*. The opposite is *Shakl churel kī aur mizāj pariyon kā*, "a witch in face and a fairy in nature."

[4] A well-known Arab saying, the meaning of which is obscure.

[5] *'Aqal* is a disease in camels' feet: as the raven hops and does not walk, it is supposed to suffer from their disease

Oates writes: "Blanford informs me that the Sind raven utters a most peculiar bell-like note besides the usual guttural cry." This clear bell-like cry is usually uttered on the wing. In the winter, in the plains of the Panjab, this metallic cry is seldom heard. During the spring and hot heather, at Fort Munro in the Sulaiman Range, it is very marked, being there frequent and exceptionally clear: it may be imagination, but the note seemed to me to be there clearer and more metallic than elsewhere.

The author of the *Bāz-Nāma-yi-Nāṣiri*, a modern Persian work on falconry, includes it amongst the birds of prey; "I have myself," he writes, "seen it catch a chukor and have taken the quarry from its[1] hands." The same writer states that if it be blinded by having its eye pierced by a needle and be then kept in the dark for twenty-four hours, it will recover its sight. He adds that Arab fowlers catch ravens in traps, and train them as common kestrils[2] are trained in the *Dashtistān*[3] of *Fārs* to act as decoys in hawk-catching, a statement fully corroborated by the falconers of *Baṣrah* and *Muḥammarah*.

Muḥammad ibn Mangalī An-Nāṣirī, author of the *Kitāb^{a} uns^{i} 'l-Matā bi-Waḥsh^{i} 'l-Falā*,[4] an Arabic work of the 14th century, writes:—"The large black *ghurāb* which is generally known as *Al-Ghudāf*, and which is styled by the Egyptians *An-Nūḥī*[5] on account of its longevity, and is also called *Al-Kabīr* (a name given to the Kite too), is the only one of the crow-kind that is trained for sport. It is trained to take hares. If two or three combine in the desert to attack a hare, they kill it with ease, while a single one will kill a middle-sized owl. * * * * *. Its grasp is very powerful. It is lured, as falcons are lured, for it is long-winded and will pursue its prey for a whole day till successful. So strong is it in the back that it can tread the female while both are flying. It should not be lured to meat, but to the skin of a gazelle or of a hare as gazelle-sakers are lured, or failing such skins to a lure of crane's[1] wings."

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[1] In the *Ā'īn-i-Akbari*, *Āīn* 28, it is recorded that "The crow (raven ?) is trained to take the sparrow, the quail and the maina." (Blochmann's translation is here incorrect).

[2] 'Vide' *Journal and Proceedings*, Asiatic Society of Bengal, Vol. II, No. 10 of 1906.

[3] A warm region of Persia on the coast: Bushire is about the centre of its coast line.

[4] The Arabic text with a French translation was published in Paris in 1880 under the title of "*Traité de Venerie : traduis de l'Arabe par Florian Pharaon avec un Introduction par M. Le Marquis G. de Cherville.*"

Unfortunately the Arabic text is corrupt, so much so that it is frequently unintelligible. Further the French translator, not being a falconer, has fallen into serious errors.

[5] لَسْتَ بِالْبَاقِي وَلَوْ عُمِّرْتَ مَا عُمْرُ نُوحٍ

"Thou wilt not live eternally though thou livest to the age of Noah."—*Arab saying*.

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[1] كُرْكِيّ, pl. كَرَاكِي, "a crane," perhaps the Demoiselle Crane, called in India قرقرا *qarqarā*. Classically the Common Crane is غُرْنُوق *g͟hŭrnū*.

19. Notes on the distribution of Macacus arctoides, *Geoff.*

By RAI RAM BRAHMA SANYAL, BAHADUR.

The following facts, relating to the distribution of the Brown stump-tailed monkey (*Macacus arctoides*) may throw further light on the subject which, according to Blanford, is not well ascertained. Since 1878, a number of live examples of this species have, from time to time, been exhibited in the Zoological Garden, Calcutta, affording me opportunities of taking careful notes of their habitat and habits. It appears that the first specimen that came into the possession of the Garden from a well-ascertained source was the one presented by the late Mr. McCabe, for many years Deputy Commissioner of the Naga hills. As far as it is now remembered, this particular animal was owned as a pet by one of the Angami Nagas, who were brought to Calcutta during the International Exhibition of 1883-84, and whose clay model, I presume, still adorns the Ethnological gallery of the Indian Museum. In 1885, Surgeon-Major Mullane, then Superintendent of the Gowhati Jail, presented an exceptionally fine specimen of *M. arctoides*, which he had procured from the Naga hills when still very young. The Garo hills and Sadya have also contributed examples of this species to the Garden. Several specimens captured within his own jurisdiction were presented by the Raja of Tipperah.

In 1880, a young monkey was purchased from a Tibetan, a typical member of the nomadic tribe inhabiting Eastern Tibet, who came in charge of a couple of Yaks, which Sir Ashley Eden had obtained for presentation to the Zoological Society's Garden, London. It was quite a baby when it came, and was carried in the ample folds of its nomadic owner's garments; and it grew to be a remarkably fine animal. In form and habits it resembled a *Macacus arctoides* from Assam, Cachar or Tipperah in almost every detail, although it never assumed the reddish flesh colour of the face said to be characteristic of the species. Perhaps it is this absence of the red colour of the face in the northern form of the species which led older zoologists to separate it from the Indian form.

Besides these we have had examples of this species from the Malayan Peninsula and Borneo, the latter being generally lighter in colour, and less amiable in disposition.

With regard to the colouration of the face and buttocks, Blanford describes them as bright red, and Forbes as reddish flesh colour. All that can be said on this point after a personal experience extending over many years during which a large number of live examples of this species, young and adult, have come under the observation of the writer of these notes, is that this character is by no means constant. The colour of the face and buttocks, specially of the former, is as changeable in this species as in *Macacus rhesus*.

20. Sanskrit works on Literature, Grammar, Rhetoric and Lexicography as preserved in Tibet.

By Satis Chandra Vidyābhūṣaṇa, M.A.

The materials of the present paper are derived from two volumes of the Tangyur (section mdo), *viz.*, Le and Se, the first of which was brought down to Calcutta from Gyantse during the Tibet expedition of 1903, and the second was deposited in the India Office, London, by the late Mr. Hodgson. The paper gives a short account of 28 secular Sanskrit works that were translated into Tibetan during the Buddhistic age, and of which the translations were preserved in the Tangyur collection by the foremost Tibetan scholar Bu-ston, at the end of the 13th century A.D. The originals of some of these works such as Meghadūta, Kāvyādarśa, Amarakoṣa, Kalāpa-vyākaraṇa and Candra-vyākaraṇa still exist in India, while those of the remaining works have been lost here. It is a matter of congratulation that the Lamas, taking advantage of the printing system that prevailed in Tibet very extensively in the 12th century A.D., have also in some cases preserved the Sanskrit originals side by side with the Tibetan translations. Thus, for instance, the Chando-ratnākara, which has been noticed in this paper, has been preserved in Tibet both in its Sanskrit original and Tibetan version. The translations were made largely in the Sāṣkya monastery of Tibet.

1. चन्द्रव्याकरणसूत्रनाम, Candra-vyākaraṇa-sūtra-nāma (Tib. ལུང་དུ་སྟོན་པ་ཙ་ནྡྲ་པའི་མདོ་ཞེས་བྱ་བ)—The aphorisms of the Candra-vyākaraṇa, by Candra-gomi.[1]

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[1] There is a Sanskrit manuscript of the Candra-vyākaraṇa in the Library of the Asiatic Society of Bengal, Govt. collection No. 3828. It is written in Newari and begins thus:—

ओं नमो वागीश्वराय ॥
सिद्धं प्रणम्य सर्वज्ञं सर्वीयं जगतां गुरुम् ।
लघुविस्पष्टसम्पूर्णमुच्यते शब्दलक्षणम् ॥

It consists of six chapters and ends thus:—

चान्द्रव्याकरणे षष्ठोऽध्यायः समाप्तः ॥
ओं संवत् ९७१ फाल्गुन शुक्लदशम्यां बुधवासरे आर्द्रानक्षत्रे........राजाधिराज परमेश्वर-परमभट्टारक श्रीश्रीजयराजदेवस्य विजयराज्ये यथा कथंचिल्लिखितं दैव वाशेन मार्गं गुणिनः क्षमध्वम् ॥

It extends over leaves 1—35*a* of the Tangyur, m̱do, Le, and begins with a salutation to the god of speech (ངག་གི་དབང་ཕྱུག) and to the Omniscient One (ཐམས་ཅད་མཁྱེན). It is divided into six chapters (ལེའུ) of four feet each (རྐང་པ), and was written by the great venerable teacher Candra-gomi. It was translated into Tibetan by the interpreter S'akya-bhikṣu Ñi-ma-ṟgyal-m̱tshan-ḏpal-ḇzaṅ, with the help of the great Nepalese Brāhman-paṇḍita Jetakarṇa, the crest gem of all linguists. The translation was made in the monastery of the Ḏpal-thar pa-gliṅ (Thar-pa being a place near Dong-tse in Tibet). It ends thus :--"May this continue on the earth as the sun and moon !"

2 **विंशत्युपसर्गवृत्तिनाम,** Viṃśatyupasarga-vṛtti-nāma (Tib. ཉེ་བར་བསྒྱུར་བ་ཉི་ཤུ་པའི་འགྲེལ་པ་ཞེས་བྱ་བ) - Commentary on the twenty prefixes, by Candra-gomi.

It extends over leaves 35*b*—39*b* of the Tangyur, m̱do, Le, and begins with an obeisance to Mañjuśrī-Kumāra-bhūta. The author of the work was Candra-gomi. It was translated into Tibetan by the interpreter S'ākya-bhikṣu Ñi-ma-ṟgyal-m̱tshan-ḏpal-ḇzan, with the help of the great linguist Paṇḍita Jetakarṇa. The translation was completed in the monastery of Ḏpal-thar-pa-glin. It ends thus : "May this continue on the earth like the sun and moon !"

3. **वर्णसूत्रनाम,** Varṇa-sūtra-nāma (Tib. ཡི་གེའི་མདོ་ཞེས་བྱ་བ)—The aphorisms on the alphabet by Candra-gomi.

It extends over leaves 40*a*—41*a* of the Tangyur, m̱do, Le, and begins with an obeisance to Mañjuśri-Kumārabhūta.

This work, which had originally been compiled by Candra-gomi, was translated into Tibetan by the interpreter S'ākya-bhikṣu Ñi-ma-ṟgyal-m̱tshan-ḏpal-ḇzaṅ.

In the Society there is also a manuscript of the commentary on Candra-vyākaraṇa, named Pañjikā, by Ratnamati.

4. **वर्णसूत्रवृत्तिनाम,** Varṇa-sūtra-vṛtti-nāma (Tib. ཡི་གེའི་མདོའི་འགྲེལ་པ་ཞེས་བྱ་བ)—Commentary on the Varṇa-sūtra by Dharmapāla.

It extends over leaves 41*a*—46*a* of the Tangyur, m̱do, Le, and begins with an invocation to Mañjuśrī-Kumārabhūta. The work, which consists of 119 stanzas, was compiled by the teacher Dharmapāla (ཆོས་སྐྱོང་). It was translated into Tibetan by the interpreter S'ākya-Gelong Ñi-ma-ṟgyal-m̱tshan-ḏpal-ḇzan-po, with the help of the great Nepalese Paṇḍita Jetrakarṇa of the town of Yambu. The translation was completed in the monastery of Ḏpal-thar-paẖi-glin. It ends thus: "May this continue on the earth like the sun and moon!"

5. **अधिकारसंग्रहनाम,** Adhikāra-saṃgraha-nāma (Tib. སྒྲོར་བདང་བ་ཡང་དག་པར་བསྡུས་པ་ཞེས་བྱ་བ)—A collection of governing rules (of *La*-kāra or case-endings).

It extends over leaves 46*a*—55*b* of the Tangyur m̱do, Le, and begins thus: གཉིས་སུ་མེད་པར་གསུང་བ་ངག་གི་དབང་ཕྱུག་ལ ཕྱག་འཚལ་ལོ།།

གྲུབ་པ་ཀུན་མཁྱེན་ཀུན་ལ་ཕན།།
འགྲོ་བའི་བླ་མར་ཕྱག་འཚལ་ཏེ།།
ཉུང་ངུ་རྣམ་གསལ་ཡང་དག་རྫོགས།།

"Salutation to the lord of speech, the teacher of non-duality.

Bowing to the perfect, omniscient and beneficent teacher of the world, I compile (this grammar which is) small but plain."

The work is divided into six chapters of four sections each, and was translated into Tibetan by Bhikṣu Ḏpal-ḻdan-ḇlo-gros-b̲r̲tan-pa in the town of Lalitapattana (ཡེ་རང་) in Nepal. It ends thus: "May this be for the benefit of many."

6. **विभक्तिकारिका**, Vibhakti-kārikā (Tib. རྣམ་དབྱེའི་ཚིག་ལེའུར་བྱས་པ)—Memorable verses on declension.

It extends over leaves 56*a*—78*b* of the Tangyur, m̲do, Le, and begins with an invocation to the lord of speech and Mañjughoṣa. It was delivered (translated) (སྤྲས་པ) at intervals by D̲pal-l̲dan-b̲lo-gros̲-b̲r̲tan-pa.

7. **तिङन्त**, Tiṅanta (Tib. ཏིངའི་མཐའ)—Conjugation.

It extends over leaves 78*b*—83*b* of the Tangyur, m̲do, Le, and begins with an invocation to the lord of speech and to the Bodhisattva the ocean of merits. It was translated into Tibetan by the Tibetan interpreter Gelong D̲pal-l̲dan-b̲lo-gros̲-b̲r̲tan-pa in Lalitapura (རོལ་པའི་གྲོང་ཁྱེར) in Nepal.

8. **सम्बन्धोद्देश**, Sambandhoddeśa (Tib. འབྲེལ་པ་མདོར་བསྟན་པ)—Statement of the connection between bases and endings by Kāyastha Cākā-dāsa.

It extends over leaves 83*b*—86*b* of the Tangyur, m̲do, Le, and begins with an invocation to the lord of speech and Sugata. It was compiled (མཛད་པ་རྫོགས་སོ) by Kāyastha Cākā-dāsa, and was translated into Tibetan by D̲pal-l̲dan-b̲lo-gros̲-b̲r̲tan-pa, D̲ge-wah̲i-b̲śes̲-g̲ñen-tog-śiṅ-d̲pon-po B̲de-wa-chos̲-kyi-b̲zaṅ-po and others, with the help of the explanatory notes of the best of bilingual speakers named S'oṅ-s̲ton-r̲do-rje-r̲gyal-m̲tshan.

9. **कलापसूत्र**, Kalāpa-sūtra (Tib. ཀ་ལཱ་པའི་མདོ)—The aphorism of Kalāpa.

It extends over leaves 86*b*—104*b* of the Tangyur, m̱do, Le, and begins with an invocation to Buddha, the propounder of the non-dualistic doctrine (གཉིས་སུ་མེད་པར་གསུང་བ་སངས་རྒྱས). It was translated into Tibetan by Ḇlo-gros̱-ḇṟtan-pa (the third), with the help of the commentary of Durga-siṃha.

10. **कलापसूत्रनामवृत्ति**, Kalāpa-sūtra-nāma-vṛtti (Tib. ཙབས་གས་ཀྱི་མདོ་འི་འགྲེལ་པ་ཞེས་པ)—A commentary on the Kalāpa-sūtra, by Durga-siṃha.

It extends over leaves 104*b*—118*b* of the Tangyur, m̱do, Le, and begins with an invocation to the lord of speech and Buddha thus:—

བཅོམ་ལྡན་འདས་གསུང་གི་དབང་ཕྱུག་ལ་ཕྱག་འཚལ་ལོ ||
ཀུན་མཁྱེན་ཐམས་ཅད་གཟིགས་པ་པ ||
ལྷ་ཡི་ལྷ་ལ་ཕྱག་བཙལ་ནས ||
ཤརྦ་བརྨས་རྣམ་བཤད་པའི ||
རྒྱུད་ཉུང་བདག་གིས་རབ་བཤད་བྱ ||

"Salutation to the blessed lord of speech.
Bowing to the god of gods—the all-knowing and the seer of all—I shall set forth the explanation of the Kātantra (Kalāpa) of S'arva-varma."

Durgasiṃha was the author of the work. It was translated into Tibetan by Ḇhikṣu Ḏpal-ḻdan-ḇlos-gros̱-ḇṟtan-pa with the help of the Pañjikā (དཀའ་འགྲེལ = explanation of difficulties) by Trilocana-dāsa. The translation was completed in the monastery of Ḏpal-gnas̱-po-che.

11. **कलापलघुवृत्तिशिशुहितनाम**, Kalāpa-laghu-vṛtti-śiśu-hita-nāma (Tib. ཀ་ལཱ་པའི་འགྲེལ་པ་ཉུང་ངུ་ལས་སློབ་མ་ལ་ཕན་པ་ཞེས་བྱ་བ)—A light commentary on Kalāpa for the use of children, by Yaśobhūti.

It extends over leaves 118*b*—152*a* of the Tangyur, m̱do, Le, and begins with an invocation to the lord of speech. It was written by the Brāhmaṇa Yaśobhūti (བྲམ་ཟེ་གྲགས་འབྱོར) for the use of pupils, and was translated into Tibetan by Lha-ḇla-ma-shi-wa-ẖod in the monastery of Tho-liṅ-gser in the province of Shan-shun (Western Tibet).

12. **स्याद्यन्तप्रक्रिया**, Syādyanta-prakriyā (Tib. སི་ལ་སོགས་པའི་མཐའི་བྱ་བ)—The operation of the case-endings *si*, etc., by Mañjukīrti.

It extends over leaves 152*b*—212*b* of the Tangyur, m̱do, Le, and begins with an invocation to Bhagavān Mañjunatha. It was composed by the sage S'rī-Mañju-kīrti (Ḏpal-ḻdan-ẖjam-paẖi-grags̱-pa) and was translated into Tibetan by Gelong Ḏpal-ḻdan-ḇlo-gros̱-ḇr̲tan-pa. The translation was completed in the monastery of Ḏpal-gnas̱-po che.

13. **सर्वभाषाप्रवर्त्तनव्याकरणशास्त्र**, Sarva - bhāṣā - pravarttana - vyākaraṇa-śāstra (Tib. སྒྲ་བ་ཀུན་ལ་འཇུག་པའི་སྒྲའི་བསྟན་བཅོས)—The science of grammar introductory to all languages by Subhāṣakīrti.

It consists of the leaves 212*b*—213*b* of the Tangyur, m̱do, Le and begins with an invocation to Sarvajña (ཀུན་མཁྱེན). The author of the work was the great teacher Subhāṣa-kīrti.

14. **सर्वभाषाप्रवर्त्तनव्याकरणशास्त्रस्य वृत्तिः**, Sarva-bhāṣā-pravarttana-vyākaraṇa-śāstrasya-vṛttiḥ (Tib.: སྒྲ་བ་ཀུན་ལས་འཇུག་པའི་སྒྲའི་བསྟན་བཅོས་ཀྱི་འགྲེལ་པ)—A commentary on the Sarva - bhāṣā - pravarttana - vyākaraṇa - śāstra

It extends over leaves 213*b*—222*a* of the Tangyur, m̱do, Le, and begins with an invocation to Sarvajña (ཐམས་ཅད་མཁྱེན་པ) It was compiled by the great teacher Subhāṣa-kīrti.

15. **प्रयोगमुखवृत्ति**, Prayoga-mukha-vṛtti (Tib. རབ་ཏུ་སྦྱོར་བའི་སྒོ་འི་འགྲེལ་པ)—A commentary (named) the door of application.

It extends over leaves 222*b*—230*a* of the Tangyur, m̱do, Le, and begins with an invocation to the Lord of the world (འཇིག་རྟེན་མགོན་པོ)།

16. **पिण्डनिवर्त्तननिर्देशकारिका**, Piṇḍa-nivarttana-nirdeśa-kārikā (Tib. ཀློག་པ་བསྡུས་པ་བསྟན་པའི་ཚིག་ལེའུར་བྱས་པ)—Memorable verses on the principles of mutual combination (*sandi*).

It extends over leaves 230*b*—234*a* of the Tangyur, m̱do, Le, and begins with an invocation to Mañjuśrī-nātha (འཇམ་པའི་དཔལ་མགོན)།

17. **पिण्डनिवर्त्तननिर्देशवार्त्तिक**, Piṇḍa-nivarttana-nirdeśa-vārttika (Tib. ཀློག་ པ་ བསྡུས་ པ་ བསྟན་པའི་རྣམ་འགྲེལ)—A commentary on the Piṇḍa-nivarttana-nirdeśa by Nividharma.

It extends over leaves 234*a*—260*b* of the Tangyur, m̱do, Le, and begins with an invocation to Mañjuśrīnātha, the blessed lord of speech. It was compiled by teacher Nividharma for the use of learners of small intellect.

18. **वचनमुखायुधोपमनाम**, Vacanamukhāyudhopama-nāma (Tib. སྨྲ་བའི་སྒོ་མཚོན་ཆ་ལྟ་བུ་ཞེས་བྱ་བ)—"The door of speech comparable to a weapon," by Medhākīrti.

It extends over leaves 260*b*—265*b* of the Tangyur, m̱do, Le, and begins with an invocation to Sarvajña the foremost of speakers (སྨྲ་བའི་མཆོག་ཐམས་ཅད་མཁྱེན་པ). It was published with annotations by the Indian sage Medhākīrti (དྲན་པ་ཡི་ཤེས་གྲགས་པ,

"Memory-knowledge—fame") under instructions from his *guru* Dhanabhadrakīrti (ནོར་བཟང་གྲགས་པ) for the sake of his pupil Kumārakīrti (གཞོན་ནུ་གྲགས་པ)།

19. **वचनमुखायुधोपमनामवृत्ति,** Vacana-mukhāyudhopama-nāma-vṛtti (Tib. སྨྲ་བའི་སྒོ་མཚོན་ཆ་ལྟ་བུ་ཞེས་བྱ་བའི་འགྲེལ་པ)—A commentary on the Vacanamukhāyudhopama by Jñāna.

It extends over leaves 266*a*—291*a* of the Tangyur, m̱do, Le, and begins with an invocation to Sarvajña, the foremost of speakers. It was published with annotations by the Indian sage Jñāna (ཡེ་ཤེས་པ = དྲན་པ་ཡེ་ཤེས་གྲགས་པ = Medhākīrti), under instructions from his *guru* Dhanabhadrakīrti (ནོར་བཟང་གྲགས་པ), for the sake of his pupil Kumārakīrti (གཞོན་ནུ་གྲགས་པ)།

20. **उपसर्गलक्षणभाषित,** Upasarga-lakṣaṇa-bhāṣita (Tib. ཉེ་བསྒྱུར་གྱི་མཚན་ཉིད་ཀྱི་བཤད་པ)—"Explanation of the characters of prefixes" by Indra-datta.

It extends over leaves 291*a*—306*a* of the Tangyur, m̱do, Le, and begins with salutation to Sarvajña. It was composed by the teacher Indra-datta of Ghāṭāpa and was translated into Tibetan by the interpreter Nam-m̱khaḥ-ḇzañ-po. It ends thus: "May this be profitable to many sentient beings!"

21. **अमरकोषनाम,** Amarakoṣa-nāma (Tib. འཆི་མེད་མཛོད་ཅེས་བྱ་བ)—Immortal treasury (of words), by Amara-Siṃha.

It extends over leaves 1–58*b* of the Tangyur, m̱do, S'e (ཤེ), and begins with an invocation to Sarvajña (ཐམས་ཅད་མཁྱེན་པ). It was composed by Amarasiṃha (འཆི་བ་མེད་པའི་སེང་གེ) and was translated into Tibetan by Gragṣ-pa-ṟgyal-ṃtshan of Yar-luṅṣ in the presence of the great Paṇḍita Kīrti-candra in the town of Yambu in Nepal.

22. **अमरटीका – कामधेनुनाम,** Amaraṭikā-kāmadhenu-nāma (Tib. འཆི་མེད་པའི་མཛོད་ཀྱི་རྒྱ་ཆེར་འགྲེལ་པ་འདོད་འཇོ འི་བ་མོ་ཞེས་བྱ་བ)—The milch-cow of extensive commentary on the Amarakoṣa by Subhūti-candra.

It extends over leaves 58*b*—78*b* of the Tangyur, ṃdo, S'e (ཤེ) and begins with an invocation to the blessed lord of speech. It was composed by teacher Subhūti-candra (རབ་འབྱོར་ཟླ་བ), and having been abridged a little in the laudatory part, it was translated into Tibetan by the Indian sage Kīrti-candra and Gragṣ-pa-ṟgyal-ṃtshan of Yar-luṅṣ, in the town of Yambu in Nepal.

23. **काव्यादर्श,** Kāvyādarśa (Tib. སྙན་དངགས་ཀྱི་མེ་ལོང་),—A mirror of poetics by Daṇḍi.

It extends over 78*b*—103*b* of the Tangyur, ṃdo, S'e (ཤེ), and begins with an invocation to Mañjuśrī-Kumārabhūta (འཇམ་དཔལ་གཞོན་ནུར་གྱུར་པ). It is divided into three chapters (རྣམ་པར་བཅད་པ = pariccheda), and was composed by teacher Daṇḍi (དབྱུག་པ་ཅན). It was translated into Tibetan by the Indian sage —S'rī-Lakṣmīkara—who was versed in poetics, and the Tibetan interpreter Gelong S'oṅ-ṣton, by order of the accomplished and holy Lama, the master S'ākya-ḇzaṅ-po, who was a precious, devout lord of immeasurable merits. The translation was completed in the great blessed monastery of Saṣkya. By the kind order of S'oṅ-ṣton himself, the famous interpreter Ḏpal-ḻdan-ḇlo-groṣ-ḇrtan-pa, in conformity with the commentary of the great teacher Ratnaśri, published this revised translation with suitable annotations.

24. **छन्दोरत्नाकर**, Chando-ratnākara (Tib. སྡེབ་སྦྱོར་རིན་ཆེན་འབྱུང་གནས)—The ocean of metres.

It extends over leaves 104*a*—114*a* of the Tangyur, ṃdo, S'e (ཤེ) and begins with an invocation to the lord of speech. The opening lines run as follows:—

རྒྱལ་བ་ཐུབ་པ་ཉི་མ་ནི།
སྣང་བ་མཆོག་གི་བདག་ཉིད་ཅན།
ཉང་གི་མཚན་མོ་བ་ཞེས་བྲལ་གྱིས།
ཉང་གི་ཉིན་བྱེད་ལ་ཕྱག་འཚལ།།
ཚོགས་བཅད་རྐང་བཞི་དེ་ཡང་ནི།
བྲི་དྡ་ཛཱ་ཏི་རྣམ་གཉིས་དབྱེ།
ཡི་གེ་བགྲང་བ་བྲི་དྡ་ཡིན།
ཕྱི་མོ་བགྲང་བ་ཛཱ་ཏིར་འགྱུར།།

The Sanskrit version, which is given side by side, runs as follows:—

जिनाय मुनिसूर्य्याय परमज्योतिरात्मने ।
यन्मार्गेषि विमितानामन्तर्दिनकृते नमः ।
वर्ण्यं चतुष्पदी तत्र वृत्तजातिप्रभेदतो द्विविधम् ।
अक्षरसंख्यं वृत्तं मात्रासंख्या भवति जातिः ।

25. **छन्दोरत्नाकरनाम**, Chando-ratnākara-nāma (Tib. སྡེབ་སྦྱོར་རིན་ཆེན་འབྱུང་གནས)—The ocean of metr

It extends over leaves 114*a*—137*b* of the Tangyur, mdo, S'e (ཤེ) and begins with an invocation to **Mañjuśrī-Kumārabhūta**, the lord of speech.

It was compiled by Sarvajña-ratnākara S'āntipāda (ཐམས་ཅད་མཁྱེན་པ་རིན་ཆེན་འབྱུང་གནས་ཞི་བའི་ཞབས) and was translated into Tibetan by the pious Ra-sa-va and Grags-pa rgyal-mtshan of Yar-luṅs. Subsequently the translation was recast by Gelong Nam-mkhaḥ-bzaṅ-po in the presence of Byaṅ-chub-rtse-mo.

26. **वृत्तमाला,** Vṛttamālā (Tib.: སྡེབ་སྦྱོར་གྱི་ཕྲེང་བའི་བསྟོད་པ)—
A garland of metres.

It consists of the leaves 138—150*a* of the Tangyur, mdo, S'e (ཤེ), and begins with an invocation to Mañju-nātha. It was translated into Tibetan under the supervision of S'oṅ-ston-rdo-rje-rgyal mtshan, the incomparable sage and the crest-gem of bi-lingual speakers. The translation was recast and put in order by Lotsava Gelong Dpal-ldan-blo-gros-brtan-pa, the chief of the pupils of the school of S'oṅ-ston-rdo-rje, relying on the commentary of teacher S'ākya-rakṣita.

27. **त्याद्यन्तस्य क्रियाविरचितनाम,** Tyādyantasya-kriyā-viracita-nāma (Tib. ཏི་ལ་སོགས་པའི་མཐའི་བྱ་བ་རྣམ་པར་དཔྱད་པ་ཞེས་བྱ་བ)—Composition of verbs by adding the endings *ti*, etc., by Sarvadhara.

It extends over leaves 150*a*—307*b* of the Tangyur, mdo, S'e (ཤེ), and begins with an invocation to White Tārā, the great mistress of speech, and holdress of sciences (དཔལ་ངག་གི་དབང་ཕྱུག་རིག་འཛིན་ཆེན་མོ་སྒྲོལ་མ་དཀར་མོ)।

The work was composed by Saravadhara following Kalāpa. It was translated into Tibetan in the monastery of Yaṅ-rtse in

Ṅam-ṛin by the great Paṇḍita S'ri-Maṇika and the Tibetan interpreter Ṛdo-rje-ṛgyal-ṃtshan.

28. **मेघदूतनाम**, Meghadūta nāma (Tib. སྤྲིན་གྱི་ཕོ་ཉ་ཞེས་བྱ་བ)—
The cloud-messenger by **Kālidāsa.**

It extends over leaves 307*b*—320*a* of the Tangyur, ṃdo, S'e (ཤེ) and begins with an invocation to Buddha, the Lord of speech.

The work was composed by the great poet Kālidāsa ནག་མོ་འི་ཁེལ)། It was translated into Tibetan by the Kāśmīrian Paṇḍita the great poet Sumana-śri, the famous Lotsava of Shu-chen named Gelong Byan-chub-ṛtse-mo and the interpreter Nam-ṃkhaḥ-ḅzan-po, in the blessed monastery of Saṣkya.[1]

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[1] The volume *La* of the Tangyur, ṃdo, that has been used by me in the preparation of this paper, was brought down to Calcutta from Gyantse, during the late Tibet Mission, while volume S'e (ཤེ) of the Tangyur, ṃdo, which also I have used in the paper, was given me as a loan by the India Office, London, through the kind recommendation of Mr. F. W. Thomas.

21. Notes from the Chemical Laboratory of the Presidency College. Note No. 1.—A new method of preparing Mercurous Iodide.

By PANCHANAN NEOGI, M.A., *Premchand Roychand Scholar, and Government of Bengal Research Scholar.*

Yvon (Comptes rendus, 76, 1607) obtained mercurous iodide by heating mercury and iodine in a retort on a sand-bath to 250°. Stroman (Berichte, 20, 2818) also got it on a large scale by heating a strong solution of $HgNO_3$ containing a little nitric acid with excess of iodine. Rây (Journ. Asiatic Soc. Bengal, lxix. pt. ii., 1900, p. 477) has prepared it by the interaction of ethyl iodide on mercurous nitrite. In all these cases the mercurous ioide obtained was of a distinct yellow colour.

EXPERIMENTAL.

A sample of isopropyl iodide prepared from glycerin, iodine and phosphorus was left with a globule of mercury in order to keep it colourless. The iodide remained with the globule of mercury for nearly eight months in a dark room unobserved, at the end of which time it was taken out. I was surprised to find beautiful, yellcw, shining crystals at the neck of the flask instead of isopropyl iodide in it. Another layer of red crystals of mercuric iodide was found above the layer of the yellow crystals. The isopropyl iodide being very unstable even in the dark evidently liberated iodine, which in the nascent state combined with the mercury present forming mercurous iodide, which sublimed gradually during the long interval on the neck of the flask forming large, beautiful, yellow crystals, while a portion of the mercurous iodide was oxidised to mercuric iodide forming the layer of red crystals.

The experiment was repeated with methyl, ethyl and isopropyl iodides in presence of sunlight, in order to expedite the liberation of iodine by the actinic action of sunlight. In this manner a larger yield of mercurous iodide was secured. The experiment was conducted in the following manner. The iodide was taken along with mercury in a round-bottomed flask, which was corked with a rubber-cork and exposed to strong diffused sunlight. The cork was occasionally removed in order to allow the gaseous products of decomposition to pass away and the contents of the flask were occasionally shaken. As the reaction went on, a yellow deposit was continuously formed, and when the whole of the iodide was used up. fresh iodide was poured in until the whole of the mercury was converted into the yellow compound. The yellow deposit was then transferred into a small

Erlenmeyer flask, and mercurous iodide was sublimed off in an atmosphere of carbon dioxide by partially immersing the flask in a glycerin bath. In this way beautiful, yellow crystals of mercurous ioide were obtained. Any accompanying mercuric iodide was removed by alcohol in which it is soluble.

Analysis: 0·112g. of the substance gave 0·0789g. of AgI by Carius' method, whence the percentage of iodine is 38·1, that required by theory for mercurous iodide being 38·8.

The present investigation confirms the observation of Yvon, Stroman and Rây that pure mercurous iodide is bright yellow, while the so-called green variety of mercurous iodide is evidently a mixture.

22. Notes from the Chemical Laboratory of the Presidency College. Note No. 2.—Nitro-ethane as a Solvent of Iodoform.

By Panchanan Neogi, M.A.

While preparing nitro-ethane by the action of alkali nitrites on the alkaline salts of ethyl sulphuric acid (Rây and Neogi, in Trans. Chem. Soc., Decem., 1906) the distillate obtained consisted of a mixture of alcohol and nitro-ethane. It was then found that the iodoform test of alcohol failed with the liquid obtained, though alcohol was distilled off at its usual boiling point. Known mixtures of pure nitro-ethane and alcohol were then taken and found not to respond to the iodoform test of alcohol. Two explanations seemed to account for this singular behaviour:—first, that a compound was formed by the interaction of iodoform with nitro-ethane; and second, that iodoform was soluble in nitro-ethane. In order to decide between the two, pure iodoform was repeatedly shaken up in excess with pure nitro-ethane in a test-tube, and the tube was immersed in water in the dark room in order to keep the temperature constant. After several hours the supernatant, clear liquid was drawn up by means of a pipette and weighed. It was then kept in a vacuum desiccator over caustic potash and soda lime, when nitro-ethane evaporated and yellow crystals remained which were weighed. The melting point of the substance as well as its peculiar odour proved it to be iodoform.

Exp. I.—2·0316g. of a saturated solution of iodoform in nitro-ethane at 23° gave ·1002g. of iodoform on evaporation, whence 100 vols. of nitro-ethane dissolve 5·4g. of iodoform at 23°.

Exp. II.—2·4452g. of a saturated solution at 23° gave, on evaporation, ·1217g. of iodoform; hence 100 vols. of nitro-ethane dissolve 5·5g. of iodoform at 23°.

23. Notes from the Chemical Laboratory of the Presidency College. Note No. 3.—On Silver-Mercuroso-Mercuric Nitrate.

By P. C. Rây.

It has already been shown that mercurous nitrite when treated with water, undergoes partial dissociation. But however much the solution may be diluted, about 22 per cent of the salt dissolves without decomposition.[1] The explanation of this anomalous behaviour lies in the fact that in solution a pretty stable compound $4Hg\ (NO_2)_2 + 2\ (Hg\ NO_2)$ is formed. If, however, an alkaline nitrite or even silver nitrite be added to the above solution, the mercurous nitrite is completely dissociated into mercury and mercuric nitrite (*vide* Journ. Asiatic Soc. Bengal, lxix., pt. ii., 1900, p. 413).

Recently I have been engaged in a systematic investigation of this subject. A large excess of mercurous nitrite was triturated in a mortar with silver nitrite, and water was added from time to time. The liquid, which looks dirty grey due to the suspension of metallic mercury in a fine state of division, on filtration gave a clear, pale-yellow solution It was then allowed to evaporate under diminished pressure over sulphuric acid. After a few days a bright yellow, crystalline powder was obtained. The compound proved to be silver-mercuroso-mercuric nitrate. The analysis of a typical preparation is given below :—

Mercuric mercury	Hg''	...	26·23÷200=0·1312	
Mercurous mercury	Hg'	...	45·81÷200=0·2290	0·2670.
Silver	Ag	...	4·15÷108=0·0380	
Nitrogen	N	...	3·60÷ 14=0·2570	

The simplest ratio is $Hg'' : (Hg' + Ag) : N = 1 : 2 : 2$. Hence the formula of the compound would be $Hg''\ (Hg', Ag)_2\ (NO_3)_2$.

It has already been shown that when the solution of mercuroso-mercuric nitrite is allowed to evaporate spontaneously, a basic mercuroso-mercuric nitrate in the shape of a yellow crystalline powder is obtained (Trans. Chem. Soc., 87, 1905, 174), the nitrite undergoing decomposition thus,

$$3Hg\ NO_2 = Hg_2O + HgNO_3 + 2NO.$$

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[1] Journ. Asiatic Soc. Bengal, lxv. pt. ii. (1896), p. 1.

In the present instance a basic mercuroso-mercuric nitrate has been formed, in which a part of the mercurous mercury has been replaced by silver. Evidently we have here a remarkable case of isomorphism. I am not aware of any instance in which univalent mercury is isomorphously replaced by silver.

24. Some Birds and other animals that have been metamorphosed [being an extract from the *Kitābu'l-Jamharah fī ‘ilmi'l-Bazyarah*,[1] an Arabic manuscript, No. 865, in the Library of the Asiatic Society of Bengal].

By LIEUT.-COLONEL D. C. PHILLOTT and MR. R. F. AZOO.

Amongst traditions handed down to us from trustworthy sources is one that the Prophet (on whom be the Peace and Blessing of God) once said: "The metamorphosed beings in this world are seven hundred, and these rebelled against the Vicars of the Prophets after the death of the latter. Four hundred of them took to the land and three hundred to the sea." He then repeated this sacred verse: "And we made them the subject of stories and we scattered them utterly."[2] Of them, too, a poet has said:—

"Those that opposed the Guides in religion were changed on the spot and were utterly scattered."

Muḥammad, son of *Abū ‘Abd*^{i} *'llah*, has related to us on the authority of *Muḥammad* son of *Aḥmad*, who heard it from *Muḥammad son of Ismā‘īl*, of the family of *‘Alī*, who heard it from *‘Alī* the son of *Al-Ḥusayn*, the son of *‘Alī* the son of *‘Umar*, the son of *‘Alī*, the son of *Al-Ḥusayn*, the son of *‘Alī*, the son of *Abū Ṭālib* (peace be on them) that he (*‘Alī*) said: "The Apostle of God (blessings on Him and on his Family and on his Companions) once said, 'The metamorphosed beings that people can see and have seen are nineteen. These are, the elephant, the bear, the scorpion, the 'spiny-tailed lizard'[3] (*ẓabb*), the spider, the *du‘mūṣ*[4] the eel, the swallow (*waṭwāṭ*[5]), the pig, Venus, Canopus, the ape, the hare (according to some), the bat, the mouse,[1] the mosquito, the human louse (according to some), the gecko, the parrot, and the peacock (according to some).'

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[1] This work is in two volumes, of which only the second is in the Library of the Asiatic Society. The name of the author is not given, nor is the work mentioned in Brockelmann or in *Ḥājī Khalfa*. From the colophon at the end of the volume it appears that the book was written in 797 A.H. (1394 A.D.). This is followed by these words: "May God forgive the owner who helped in the composition of it," from which it appears that the MS. was the author's original copy.

[2] *Quran*, Chapter XXXIV., Verse 18.

[3] The spiny-tailed lizard (*Uromastix*) caught and eaten by the Arabs as well as by certain tribes of India. The flesh is white and rich, and in appearance resembles chicken's flesh. The verb حَرَشَ signifies to hunt this lizard.

[4] The دُعْمُوص *du‘mūṣ* is probably the mosquito larva. It is described by Arab authors as 'a worm with two heads living in stagnant water.'

[5] The plural word *abābīl*, primarily meaning in Arabic, "flocks of birds," is the name of the "birds" (metaphorically small-pox) that attacked the army

The author continues:—

The Apostle of God being questioned as to the reason for their metamorphosis replied: "The elephant was once a man of oppression, who took all, sparing neither green nor dry. The bear was a man, vicious and effeminate, who solicited men. The scorpion was a scandal-monger, from whose tongue none was safe. The spiny-tailed lizard was a Bedouin that used to steal from the pilgrims on their way to Mecca. The spider was a woman, who exercised witchcraft over her husband.[2] The *du'mūṣ* was a tale-bearer, who caused dissension amongst friends. The eel was a cuckold, a pander to his own wife. The swallow was a thief, who stole ripe dates from the tree-tops of his neighbours. Pigs were those Christians that asked Jesus for a table from Heaven, but after'its descent denied Him[3] all the more. Now Venus was a woman named *Hind*, and it was she by whom *Hārūt* and *Mārūt*[4] were fascinated and so sinned.[5] Canopus was a publican[6] of Yemen. Apes were those Jews that broke the Sabbath. The hare is said to have been a filthy woman, who never bathed after her courses—or at any other time; but God knows best. The bat was a woman, who practised witchcraft on a rival-wife and so Allah changed her into a bat. The mouse was a patriarch of the Jews with whom God was wrath, and so He transformed him into a mouse. The mosquito was a man who was wont to deride the Prophets and revile them, making grimaces in their faces, and clapping his hands[7]; so God metamorphosed him into a mosquito. Now the story about the body-louse is that a certain prophet of the Children of Israel was once standing in prayer, when one of the foolish ones of the Children of Israel came to him and began to mock him, pulling faces at him and making disgusting noises with his mouth[8]; so he moved not from that spot before God Almighty metamorphosed him into a louse. As

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of *Abrahah* with clay pellets (*Qurān*, Chapter CV., verse 3); but in Persian and in Urdu the word is singular and means "swallow."

[1] *Fār*, a singular and a collective noun includes mice and rats.

[2] Presumably while she received the attentions of her paramour.

[3] *Qurān*, Chapter V., 112.

[4] *Hārūt* and *Mārūt*, two fallen angels, now suspended head downwards in a well in Babylon. They were tempted and fell, and chose present punishment to punishment hereafter. They are supposed to be teachers of magic.

[5] *Iftatana* signifies "to be enamoured, to fall and to suffer punishment from the fall."

[6] *'Ashshār*, a publican or tax-gatherer in the Biblical sense.

[7] Arab children clap the hands in mockery or derision. There appears to be some connection between the clapping of the hands and the beating of the mosquito's wings.

[8] ضَرَّطَ بِهِ colloquial and literary "*Imiter le pet par un certain mouvement des levres.*"

to the gecko,[1] there once were two tribes of the Children of Israel and these God changed into geckos. Now the parrot was metamorphosed[2] for disobedience to God."

Aḥmad ibn Idrīs has told us that he heard from *Aḥmad ibn Muḥammad*, who heard it from *Al-Ḥusayn ibn 'Abd* 'llah*, who heard it from *Sulaymān ibn Ja'far Al-Ja'farī*, who said: "I once heard *Al-Ḥasan* (Peace be on him) saying, 'The peacock is a metamorphosed bird and was formerly a handsome man who enticed the wife of a Believer, and seduced her, and then sent her away; so God on High changed him into a pair of pea-fowl, male and female"—and Praise be to God the Lord of the Universe.

ذكر المُسُوخ من الطَّيْر وغيره

ممّا جاءت به الأُخبار عن الثِّقَات الّذين نقلوا عن المتقدمين انّ النبيّ صلى الله عليه وسلَّم قال انّ المسوخ في الدُّنيا سبعمائة أُمَّة عصوا الأَوصياء بعد الرّسل فأَخذت اربعمائة منهم برًّا وثلثمائة بحرًا ثمّ تلا هذه الآية وَجَعَلْنَا هُمْ أَحَادِيثَ وَمَزَّقْنَاهُمْ كُلَّ مُمَزَّقٍ * قال الشّاعر

إِنَّ الَّذِينَ عَلَى الأَئِمَّةِ نَافَقُوا * مُسِخُوا هُنَاكَ و مُزِّقُوا تَمْزِيقَا

قال حَدَّثنا محمّد بن ابي عبد اللّٰه قال حدّثنا محمّد بن احمد عن محمّد ابن اسماعيل العلويّ قال حدثنا عليّ بن الحسين بن علي بن عمر بن علي ابن الحسين بن عليّ بن ابي طالب عليهم السلام انه قال قال رسول اللّٰه صلّى الله عليه وعلى آله وصحبه وسلّم المسوخ التي يراها الناس ويشاهدونها تسعة عشر وهي الفيل والدُّبّ والعقرب وَالضَّبّ والعنكبوت وَالدُّعْمُوص والجِرّيّ والوَطْوَاط والخنزير

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[1] وَزَغ the gecko house-lizard called also سام ابرص, and colloquially الوبريص

[2] Apparently from a woman. There appears to be an omission in the text.

والزُّهرة وسُهَيل والقرد - وذكر قومٌ ان الأَرنب مسخٌ ايضا - والخفّاش والفار والبعوض - وقال ان القملة ايضا وهي من الجسد - قَالَ وَانّ الوزغ مسخٌ - والبّبغاء والطاووس ايضا ذكر انه مسخ - قال سئل رسول الله صلّى الله عليه وسلّم ماكان السبب في ذلك فقال صلى الله عليه وسلم امّا الفيل فكان رجلاً جبّارًا لا يدع رطبًا ولا يابسًا - و امّا الدّب فكان رجلاً مؤنّثًا يدعو الرّجال الى نفسه - وامّا العقرب فكان رجلاً همّازًا لا يسلم منه احد - واما الضبّ فَكَانَ رجلاً اعرابيًا يسرق الحجّاج بمحجّنه - واما العنكبوت فكانت امراةً سحرت زوجها و اما الدّعموص فكان رجلاً نمّامًا يقطع بين الأحبّة - واما الجّريّ فكان رجلاً ديوثا يجلب الرجال الى حلائله - واما الوطواط فكان رجلاً سارقًا يسرق الرّطب من رؤس النخيل واما الخنزير فالنصارى حين سألوا المائدة فكانوا بعد نزولها اشدّ ما كانوا تكذيبًا - وامّا الزهرة فكانت امراةً تسمّى هِند وهي التي افتتن بها هاروت وماروت - وامّا سهيل فكان رجلاً عشّاراً باليمن - واما القرد فاليهود حين اعتدوا في السبت - واما الارنب فذكر انّها كانت امراةً قذرةً لا تغتسل من الحيض ولا من غير ذلك والله اعلم - واما الخفّاش فكانت امراةً سحرت ضرّةً لها وانّ الله مسخها خفّاشًا - واما الفار فكان سبطًا من اليهود غضب الله عليه فمسخه فارًا - واما البعوض فكان رجلا يستهزئ بالانبياء ويسبّهم ويكلح في وجوههم و يصفّق بيده فمسخه الله بعوضًا - واما القملة في الجسد فان نبيًّا من الانبياء من بني اسرائيل كان قائمًا يصلّي اذ أقبل له سفيه من سفهاء بني اسرائيل فجعل يهزأُ به ويكلح في وجهه ويضرط به فما برح من مكانه حتى مسخه الله

عزّ وجلّ قملةً ۔ وامّا الوزغ فكانوا سبطين من اسباط بني اسرائيل فمسخهم الله اوزاغًا وانّ الببّغاء قد عصت الله فمسخها ۔ فنعوذ بالله من غضب الله ونقمه ۔ اخبرنا احمد بن ادريس عن احمد بن محمّد عن الحسين بن عبد الله عن سليمان ابن جعفر الجعفري قال سمعت الحسن عليه السلام يقول الطاووس مسخٌ وكان رجلاً جميلاً وانه كايد امراة رجلٍ مؤمن فوقع بها ثم ارسلها بعد ذلك فمسخه الله تعالى طاووسًا ذكرًا وانثى والحمد لله ربّ العالمين *

25. *Breynia vredenburgi*, an undescribed Echinoid from the Indian Ocean.

By MAJOR A. R. S. ANDERSON, I.M.S., B.A., C.M.Z.S.

(With Plate V).

Genus BREYNIA, Desor.

Two fascioles abactinally, internal as in *Lovenia*, and peripetalous. Large abactinal tubercles only within the peripetalous fasciole. Scrobicules not internally prominent. A subanal fasciole. Apical system as in *Lovenia* (Desor and Agassiz, *Ann. des Sci. Nat.* 3ème série, Zool., 1847. Vol. viii., p. 12, and Vol. vi. Pl. 16, fig. 14).

BREYNIA VREDENBURGI, n. sp.

1907. *Breynia* spec. nov. Vredenburg, *Records Geological Survey of India*, xxxiv., pages 275, 284.

The main features of this species are. a fairly large test resting on a spot anterior to the mouth and on the posterior part of the keeled sternum, ovoid in outline, gently arched abactinally, flat actinally; vertex behind the apical system; an oblique truncation behind; a slight groove in front for the odd ambulacrum; internal, peripetalous and subanal fascioles; an anteriorly excentric apical system constituted like that of *Breynia australasiæ;* abactinal primary tubercles with deeply sunk scrobicules; the pores of the paired ambulacra almost obliterated within the internal fasciole; the actinal, broad, bare, posterior interambulacral areas bounding a triangular sternum; a long narrow labrum; an anteriorly excentric and semilunar peristome mostly formed by ambulacral plates; and an elliptical periproct sunk in the posterior truncation.

The single specimen obtained from Port Blair, Andamans, and now in the Indian Museum, measures 39 mm. in length, 31 mm. in breadth and 21 mm. in height: the apical system is only 12 mm distant from the anterior margin, and a few mm. behind this is situated the vertex.,

In profile the anterior margin rises steeply from the ambitus and then curves quickly backwards to the apical system.

The paired ambulacra are very similar in shape to those figured by Agassiz and Desor in *Ann. Sci. Nat.* 3 ème Série. Zool. vi. (1846) Pl. 16, fig. 14. The anterior pair are almost transverse, the poriferous zones fairly close together throughout their course, not forming the wide triangular interporiferous space of *B. australasiæ* shown by A. Agassiz in *Ill. Cat. Mus. Comp. Zool.*, No. vii., Pl. xv *a.*, fig. 7: they are widest at the 4th ambulacral plate, external to the internal fasciole. Internal to the widest part the pores of the anterior zone are partially obliterate, the internal pore disappearing before the external. Between the internal fasciole and the apical system the pairs of pores are exceedingly minute, but visible with a lens.

Owing to the anterior position of the apical system the petals of the postero-lateral ambulacra cease at 13 mm. distance from the posterior margin of the test; the poriferous zones form an elongated ellipse, and not a wide angle with one another as in *B. australasiæ;* within the internal fasciole the pores are very minute.

The postero-lateral ambulacra with the adjacent parts of the sternum and postero-lateral interambulacra form wide, bare, actinal tracts. The sternum is small and triangular with smooth margins especially anteriorly, tubercular centrally; the labrum is very narrow and elongated measuring 7·5 mm. in length.

The 6th—15th plates of the postero-lateral ambulacra are partially enclosed in the subanal fasciole; and of these the 7th—14th inclusive have the pores within the fasciole modified.

The peristomial membrane is covered with plates diminishing in size from the attached to the free margin.

The periproct, situated in the upper part of the posterior truncation, is sunken and funnel-shaped and overarched by the posterior interambulacrum. The anus is situated in the upper part of the periproctal membrane which is covered with several rows of plates of which the lowest are by far the largest.

The subanal fasciole is wide and triangular, very broad above, narrowing inferiorly. The peripetalous fasciole is very narrow and extends but a short distance behind the extremity of the postero-lateral ambulacra; anteriorly it can only be traced to the margins of the odd ambulacrum. The internal fasciole is cone-shaped with rounded top; it is widest and most distinct posteriorly, narrowest anteriorly, where it sends off a branch to the margin of the odd ambulacrum, and ends by bending towards the odd ambulacrum across which it can very nearly be traced. On the entire abactinal surface there are but three perforate, smooth, tubercles with sunken scrobicules, in one anterolateral interambulacrum a single one, in the other antero-lateral interambulacrum two placed one below the other, the one furthest from the apex being situated close to the peripetalous fasciole, the second and larger one adjacent to the ambulacral petal. All three primary tubercles are situated on plates of the posterior zones of their respective interambulacra with the peripetalous fasciole and the lower one close to it.

On the margin of the odd ambulacrum within the internal fasciole are the largest abactinal secondary tubercles; below the fasciole an irregular series of lines of similar tubercles extends along the margin of the odd ambulacrum to the ambitus, and a few similar tubercles are found in the antero-lateral ambulacra near the two large primary tubercles. The remainder of the upper surface of the test is covered with small tubercles with numerous miliaries between. From the ambitus the tubercles increase in size toward the peristome, being perforate and crenulate with smooth scrobicules, the anterior margin of which is slightly raised, thus producing a somewhat imbricated appearance.

A large spine, curved near the base, surmounts the primary tubercles abactinally; and similar, but shorter spines spring from the remaining tubercles. The actinal radioles on the primary tubercles possess a very oblique collar.

The test and spines are uniformly white.

This species differs from *Breynia australasiæ*:—

1. In the steep anterior margin of the test.
2. In the presence of only one or two primary tubercles in the antero-lateral ambulacra and their absence from the postero-lateral ambulacra.
3. In the anterior position of the apical system.
4. In the length of the extra-petaloid part of the test behind the postero-lateral ambulacra.
5. In the shape of the internal fasciole.
6. In the number of plates within the subanal fasciole.
7. In the great breadth of the bare paths on either side of the sternum and their rectilinear boundaries.
8. In the great length and narrowness of the labrum.
9. In the small size of the sternum.
10. In the presence of all the interambulacra in the peristome margin, the paired ones being completely excluded in the case of *Breynia australasiæ*.
11. In the narrowness of the ambulacral petals.

It is interesting to notice that as regards points 3, 4, 5, 7, 8, 9, 10 and 11, this species agrees very closely with two fossil forms *Breynia carinata*, d'Archiac, and *Breynia multituberculata*, Vredenburg, which occur respectively in the Gaj and Nari formations (upper and middle oligocene) of Western India, the Gaj species having also been found in Java. The characters that differentiate these fossil species from the recent Indian and Pacific forms have been tabulated by Vredenburg in a notice lately published in the Records of the Geological Survey of India (Vol. xxxiv., part 4)

The abactinal primary tuberculation constitutes the most conspicuous difference between the three Indian species, being very abundant in the Nari species, somewhat sparer in the Gaj one, almost obsolete in their recent successor.

Breynia vredenburgi is remarkable for the large number of ambulacral plates traversed by the subanal fasciole which includes no less than eight modified pairs of pores, a larger number than is known in any other Spatangoid. In *Breynia australasiæ* the corresponding number is seven. It is difficult to make out exactly how many are present in the fossil species, apparently only six.

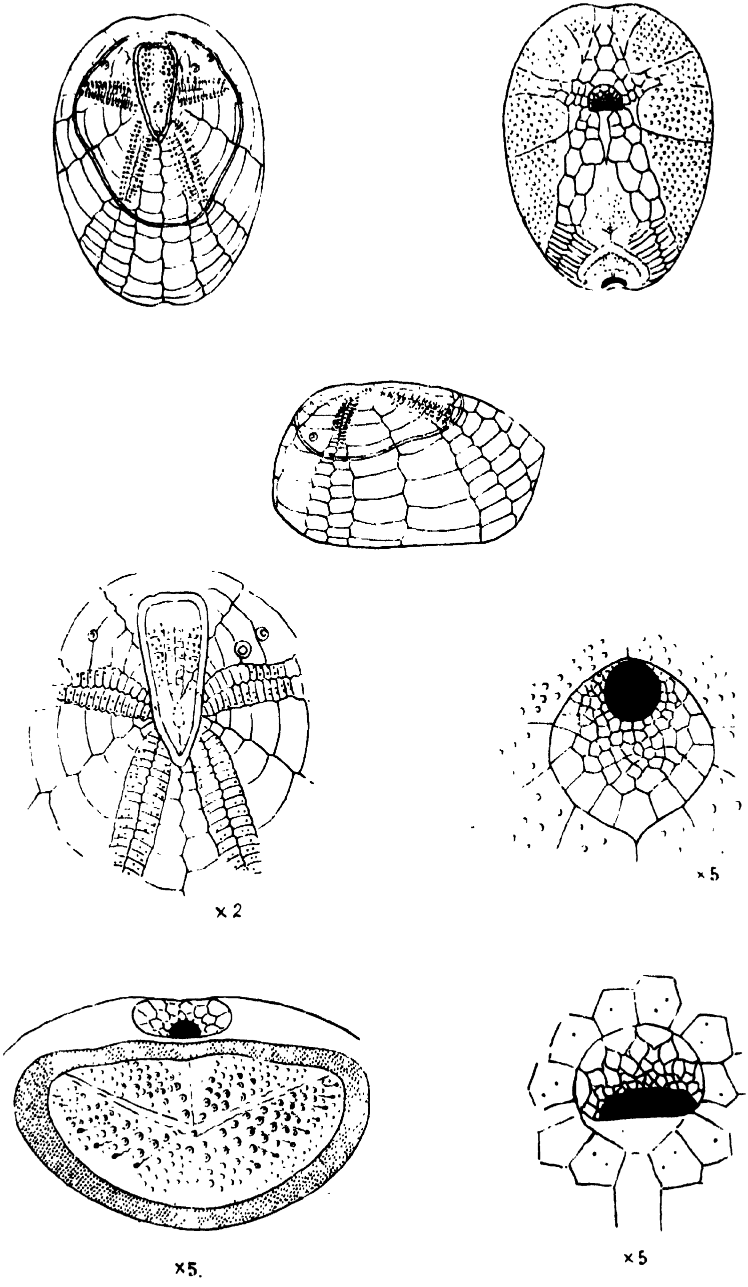
The test seems more convex in the two recent species than in the fossil ones, but owing to the tendency to collapse shown by most fossil specimens, this character is not very reliable.

When a large series of either of the two fossil species is examined, it is noticed that the internal fasciole exhibits considerable individual variations in shape. The difference observed in this respect between *Breynia australasiæ* and the solitary specimen of *Breynia vredenburgi* does not perhaps represent therefore a constant character.

The atrophy of the pores of the lateral ambulacra within the internal fasciole is somewhat more marked in the two recent species than in the fossil ones.

Taking into account the large number of points in which the three Indian species agree with one another, and also the many points in which they all differ from *Breynia australasiæ*, they may be taken to represent a group of closely related Indian species as opposed to the Pacific form. As mentioned by Vredenburg in the notice already referred to, the persistence of one particular type in the Indian area since a period so remote as the Oligocene is a fact of considerable interest.

I have great pleasure in naming this species after Mr. Vredenburg, in return for rescuing from oblivion the above description of the Breynia written by me eight years ago. To him I am also indebted for much of the information concerning the relationship of this form with its extinct Indian predecessor



Breynia Vredenburgi (*A. R. S. Anderson.*)

26. On *Gentiana coronata*, Royle.

By I. H. Burkill.

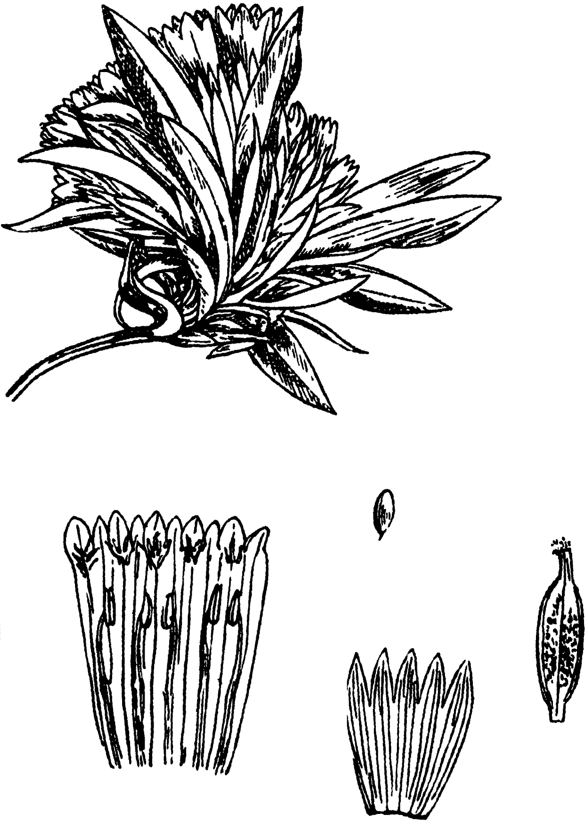
The following paper is written with the specimens of the Calcutta herbarium and the specimens of the Saharanpur herbarium before me: and it is founded chiefly on them. The most satisfactory way, I find, of treating my subject is to figure certain types, and to indicate the intermediates. I shall therefore proceed to give figures (made for me by Babu K. P. Dass of the Royal Botanic Gardens, Calcutta) of nine types, and discuss them. These nine are:—

the type-form of *Eurythalia carinata*, Don (1836) = Gentiana carinata, Griseb. (1839), and G. carinata, type, of C. B. Clarke in Sir Joseph Hooker's Flora of British India, iv, p. 113;
the type form of *Eurythalia coronata*, Don (1836) = Gentiana coronata, Royle (1837);
a plant from Chamba which has escaped a name;
the plant which is the *Gentiana marginata* of the Herbarium Indiæ Orientalis Hooker filii et T. Thomson, and at the same time the Gentiana carinata, var. marginata, of C. B. Clarke in Sir Joseph Hooker's Flora of British India, iv., p. 113, and presumedly the Ericala marginata, Don (1837) = Gentiana marginata, Griseb. (1839);
a form allied to G. Hugelii, Griseb., collected in the south range of Kashmir;
a branched soft-leaved form found in Kashmir;
a branched firm-leaved form found in Kashmir;
the type form of *Gentiana marginata*, var., *recurvata*, Kusnezow (1904);
a plant from the western border of Kashmir.

No. 1. I commence with *Eurythalia carinata*, of which I find a type in the herbarium of the Saharanpur Botanic Garden, together with many specimens collected in recent years. I figure it from one collected by Mr. J. F. Duthie on the mountain of Kedarkanta in the State of Tehri-Garhwal.

The figure shows the linear-lanceolate leaves which constitute one of the most noticeable characteristics of the plant. These leaves are not the first-formed leaves, which are ovate-lanceolate and sometimes conduplicate, as Don describes them: but they are generally removed from the base by a few pairs. The plant does not branch from the root: it is erect, generally only a couple of inches high: but even when five inches high, it is still unbranched below, except in the rarest specimens: I have seen one.

Don, with only a few plants before him, did not get hold of the points which really serve to distinguish the type that he was describing as a species: he described the lower leaves and not the middle ones: and he made a great point of the presence or absence of fimbriae in the throat of the flower, the value of which is not specific. Royle had given the manuscript name *Gentiana cœrulea*[1] to the plants in his herbarium.



Type 1. Specimen from Kedarkanta (Duthie, No. 1190). The dissections of the flower × 2, the seed × 8.

This race, No. 1, has been collected at the following places:—

District of Almora.—Between Harara and Panwandola, on the road from Pithoragarh to Almora, south of the Sarju river (King!). **State of Tehri-Garhwal.**—Taulea under Srikanta in the Bhagirathi valley at 13,000–14,000 ft. (Duthie, 456!); Changsil range, 12,000–13,000 ft. (Duthie, 14518!); Changsil at 12,000 ft. (Gamble, 24897!); Harke Dun, near the sources of the Tons river, at 12,000 ft. (Rogers!); Harke Dun, 12 000–13,000 ft. (Gamble!); Kedarkanta at 12,000 ft. (Rogers!); Kedarkanta at 11,000 ft. (Duthie, 1190!), **District of Dehra Dun**—Mussooree (Royle!). **Simla Hill States.** Bashahr, at Yangparang, 10,000–12,800 ft. (Lace, 951!); Marale, 11,000-12,800 ft. (Browne! Watt, 13,571!), **Kangra District.**—Lahul, on the Chandra valley side of the Rotang pass, at 12,000 ft. (Holland!).

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[1] I find the name written جنسے یانا سرولیا [Jansy yáná sarulyá] on one of the tickets, evidently by one of Royle's assistants, as if it were in use by his staff.

These localities are at various distances round the peak of Kedarkanta. The Almora district locality is 140 miles south-east: Tauloa is 35 miles east: Harke Dun is 15 miles north-east: Mussooree is 40 miles in a bee-line south: Changsil is 15 miles distant across the valley of the Tons in a north-westerly direction; Marale is in the same direction across this valley and the valley of the Pabar at a distance of 35 miles: and the Rotang pass is in the same direction, but at the much greater distance of 115 miles from Kedarkanta.

The altitude of the lowest of these localities, that in the Almora district, is somewhere under 7,000 ft.; the next to it, if an accurate designation, is Royle's locality "Mussooree": there the hills equally do not attain the elevation that the plant usually inhabits. The general altitude would seem to be about 11,000–13,000 feet.

The Almora district locality is a most peculiar one, for the whole of the country in which it lies, is a complex of ridges covered by oak forest and not rising as high as 7,000 feet.

Flowers that are fimbriate and flowers that are not fimbriate are distributed as follows:—

Fimbriate, Harara, Mussooree, Kedarkanta, Changsil and Yangparang.
Not fimbriate: Taulea, Harke Dun, Marale and Rotang pass.

There is no marked geographical arrangement about this.

It is interesting to note that the flowers in these plants have generally rather long corolla tubes; and that the Almora district specimen has the longest of all.

Specimens enumerated in order of their localities from east to west.

Place.		Collector.	Altitude.	Height of plants in cm.	Length and breadth in mm. of longest leaf.	Fimbriæ.
Harara	...	King.	± 6,000	3—5	32 × 8	Few.
Taulea	...	Duthie.	13—14,000	2-10	28 × 5	None.
Harke Dun	...	Rogers.	12,000	3—6	44 × 6	„
„	...	Gamble.	12—13,000	3—6	25 × 5	„
Kedarkanta	...	Royle.	.....	4—5	27 × 6	Fair number.
„	..	Duthie.	11,000	3—5	40 × 8	Few.
„	...	Rogers	12,000	2—5	29 × 7	Fair number.
Yangparang	...	Lace.	10—12,000	4—5	33 × 6	Few.
Changsil	...	Gamble.	12,000	3—4	33 × 5	„
Changsil range	...	Duthie.	12—13,000	3—4	38 × 8	Very few or few.
Marale	...	Watt.	12,800	1—2	18 × 5	None.
„	..	Browne.	11—12,800	1—2	20 × 6	„
Rotang pass	.	Holland.	12,000	1¼	16 × 4	„

The table above shows that the long leaves are generally about five times as long as broad. It shows, too, which specimens are the smallest and which have fimbriae. The largest specimen collected in the Harke Dun by Mr. C. G. Rogers is branched from the root—a rare occurrence in this race.

Flowers are produced in May and June: but were still present in August on specimens found (mostly in fruit) under the mountain of Srikanta.

The variation in them is indicated in the next table, the purpose of which is really to show that Don had not understood the species when he stated that the lobules over the plicae are only half as large as the true corolla lobes.

Origin.	Collector.	Length of calyx tube in mm.	Length of teeth in mm.	Length of corolla in mm.	Length of corolla lobes in mm.	Length of lobules in mm.
Harara	King	9·5	3	21	3	2
Kedarkanta	Royle.	8	3	16	3	2 75
Yangparang	Lace.	7	3	15	3	2·5
Changsil	Duthie	8	3	15	4	4
Harke Dun	Rogers	7	3	14	4	3·5
Taulea	Duthie.	6	2	14	3	2 5
Kedarkanta	Rogers	8	3	14	3	2
Marale	Browne.	5	2	11	3	2·75

The calyx-teeth are most acute on the Yangparang specimen, and broadest on the Marale specimen: they are slightly recurved on the Taulea specimen.

The anthers are elliptic-ovoid on every specimen except Royle's Kedarkanta specimen wherein they are, and are as described, linear.

No. 1a. Intermediate between Gentiana carinata, particularly as found under Srikanta, and a plant from Gilgit, race No 5*a* to be mentioned later, is a plant from:—

State of Tehri Garhwal.—Moraine of the Dudu glacier 14,000–15,000 feet (Duthie, 456 !)

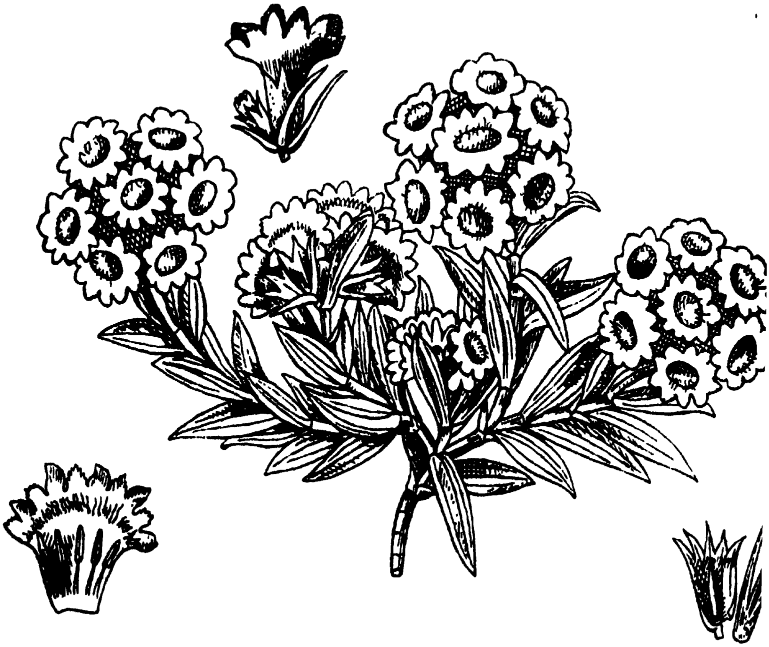
It has rather firm, lanceolate leaves, erect habit and no fimbriae in the flowers.

No. 2. My second figure is of Don's *Eurythalia coronata*. *Eurythalia coronata* was figured by Royle (Illustrations of...the Botany of the Himalayan Mountains, London, 1839, plate 68, fig. 1) as a branched plant with short, ascending stems bearing at their ends very large flowers in capitula of seven flowers each. It was quite fully described by Don in the *Transactions of the Linnean Society*, xvii., 1839, p. 515; and he, when writing, apparently had a specimen before him that is now lost. No one has been able to see it, or to find a plant that quite agrees with the drawing: Grisebach in De Candolle's *Prodromus* (ix., p. 109) was unable to do more than quote Don's description: C. B. Clarke in the *Flora of British India* (iv., p. 114), remarked that the species is only known from Royle's figure, according to which it differs from G. carinata by the wider subcampanulate corolla: and Kusnezow has not seen a type.

I have thought it serviceable here to reproduce in outline Royle's drawing, so that my comparisons may be clearer. The specimen from which the drawing was made was collected in:—

State of Tehri-Garhwal.—Near the summit of Kedarkanta (Royle).

It has fimbriae, like the specimens of *G. carinata* obtained from the same mountain. But it differs in its way of branching, and, if the drawing be correct, in the shape and size of the flowers. Unfortunately Don in his descriptions does not make any clear reference to the shape and size of the flower, so that there is no evidence, except in the general excellence of Royle's figures, that they are not overdrawn. In his diagnosis, Don lays stress on peculiarities that will not bear it. To show what these peculiarities are, I think that it may be useful to pick out from the full descriptions all the expressions that indicate them. Taking as much as posible Don's own words, they may be put as follows:—



Type 2. Copied from Royle's figure of the type of G. coronata.

Gentiana carinata.—Planta erecta, caulescens. Folia mucronata. Calyx dentibus linearibus. Corolla infundibuliformis, quinqueloba, lobis lanceolatis acuminatis, sinuum duplo brevioribus. Antheræ lineares.

Gentiana coronata—Planta depressa, subacaulis. Folia acuta. Calyx dentibus ovatis. Corolla tubulosa, decemloba, lobis ovatis, obsolute mucronulatis, sinuum conformibus vel brevioribus. Antheræ oblongæ.

The peculiarities which cannot bear the stress that Don lays on them are:—

(1) the tip of the leaf; for the same plant of 'carinata' may or may not have the tiny mucro at the tip of any one leaf;
(2) the shape of the calyx-teeth; for in 'carinata' above there is a complete series from more or less linear to ovate, and Royle's own specimen at Saharanpur has lanceolate (not linear) lobes;
(3) the size and shape of the corolla lobes; because in good 'carinata' the lobes vary enough to cover the characters ascribed to both.

I set these declared differences aside. There are left (i) Don's statement that the corolla in the one is infundibuliform and in the other tubular, and (ii) his difference in the anthers. "Infundibular," says Don, is the corolla of *Gentiana contorta* and *capitata* and *carinata*, as well as the calyx of *capitata*, while "tubular" are the calyces and corollas of *Gentiana marginata*, *argentea*, *decemfida*, *pedicellata* and *coronata*. These species, if anyone will examine them, serve to show that Don did not habitually use the two terms with such a degree of accuracy as to justify us in thinking that the words contrast in his two descriptions. Lastly, regarding the anthers, which are termed linear in the one and oblong in the other, Don is quite accurate in regard to the anthers of his carinata: they are so, in his specimens; but in all the other specimens that I have before me they are oblong.

Thus I arrive at the conclusion that besides the somewhat uncertain difference in the broadness of the corolla-tube, there is nothing to distinguish Don's *Eurythalia coronata* from his *Eurythalia carinata*, except the branched habit: and as Gentiana coronata is the oldest binominal for the species, we have to accept it instead of Gentiana carinata, otherwise preferable, on account of the obscurity into which the name G. coronata has fallen.

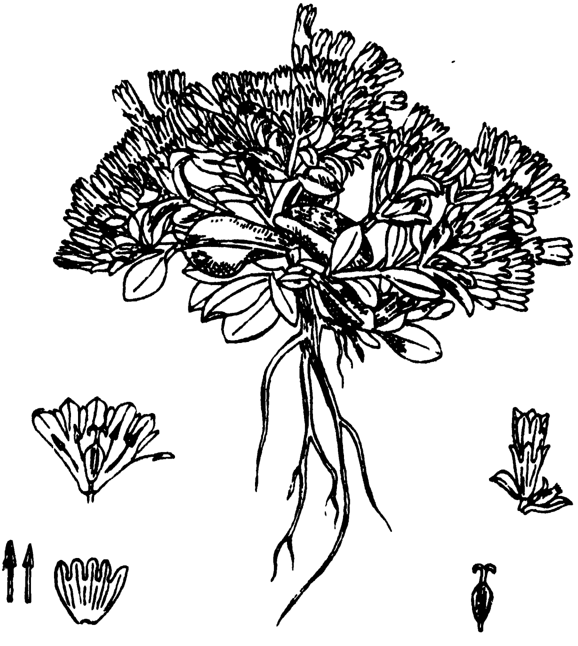
No. 3. Type No. 3 is a plant branching from the roots, but not as the last. Its outline is spherical, because there are so many short branches: the leaves are lanceolate-ovate to ovate, sometimes conduplicate: the flowers are fasciculate, and the calyx-teeth are ovate, obtuse.

This form comes from Chamba and adjoining Lahul. The localities are as follows:—

State of Chamba.—Kilar (Ellis, 51!) and Purli in the valley of the Chandra-Bhaga river, at 10,000 ft. (Ellis, 1142!); Saichu to the north of that river in a side valley, at 10,000 ft. (Ellis, 1305! 1306!). District of Kangra.—Lahul, without precise locality (Hay!).

The plant here figured came from Kilar.

The Saichu plant has fimbriae in the throat of its flowers: the others have none. The ripe ovary has a conspicuous crest.



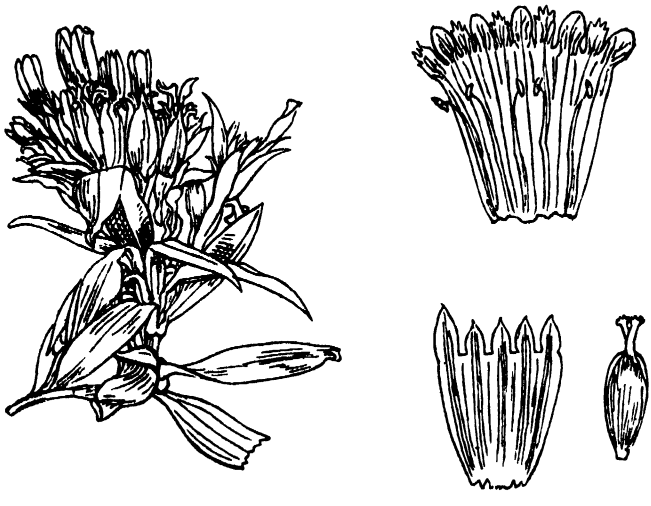
Type 3. Specimen from Chamba (Ellis.)

No. 3a. Certain specimens collected by Dr. Stoliczka approach the Chamba race last figured, and in some respects they resemble the specimens that I shall have to speak of later as collected by Colonel Tanner in Gilgit, No. 5*a*, and again in certain respects they approach the race that will be No. 4. The upper leaves are falcate, but herbaceous: the lower leaves are lanceolate or linear-lanceolate, as in the next, but the habit is the habit of the last. The flowers have a few fimbriae in the throat, and are not grouped together into considerable heads, but of 1–5 flowers together. They are quoted as *Gentiana marginata* by C. B. Clarke in the *Journal of the Linnean Society, Botany*, xiv., p. 437. Their origin is:—

Kashmir, north of the Vale.—On the Pensi-la between Suru and Zanskar (Stoliczka!).

No. 4. I now come to a series of specimens that has for extremes *Gentiana marginata* of the Herbarium Indiae Orientalis Hooker filii et T. Thomson, and *G. Hugelii*, Grisebach. *Gentiana Hugelii* has been so recently figured in this *Journal* (see 1906, p. 337) that I need not figure it again. Gentiana marginata I figure from a specimen collected by Dr. Thomson.

The name 'marginata' was first used (in manuscript) as *Gentiana marginata*, by Wallich for a distinct species that he had obtained in Central Nepal. It was next used as *Ericala marginata* by David Don in his brother's *General System of Gardening and Botany*, in confusion both for Wallich's plant and for a plant collected by Royle; this last is one of the plants with which we are here to deal, but the other is not. Royle's plant is fully described, without reference to Wallich's, in Don's paper in the *Transactions of the Linnean Society*, xvii., 1839, p. 513; and from this date the stricter application of the name to Royle's plant begins, so that it appears as *Gentiana marginata* in Grisebach's account of the Gentianaceae in De Candolles's *Prodromus*. Royle's plant seems to be identical in race with T. Thomson's: but not having a specimen of Royle's collection at hand, I cannot be positive. My remarks consequently refer to *Gentiana marginata*, Griseb., as interpreted by Sir Joseph Hooker and Dr. Thomson, and, I may add,



Type 4. Specimen collected by T. Thomson and distributed as G. marginata in the Herb. Ind. Or. Hook f. et Thoms. The dissections × 2.

afterwards by Mr. C. B. Clarke in the *Journal of the Linnean Society, Botany*, xiv., 1875, p. 437.

The distribution of the specimens is as follows :—

Chamba State.—Parmaur valley at 10,000 ft. (Lace, 1782 !). Kangra District.-Kotgarh in Lahul, 9,000–10,000 ft. (Brandis !). Kashmir, south of the Chenab.—Padri pass (T. Thomson !). Kashmir, south of the Vale.—Without locality (Falconer !); Sadru pass in the Adon pergunnah[1] (Falconer !) ; Gulmarg, 9,000 ft. (Gammie ; Aitchison !) ; above Gulmarg 11,000-12,000 ft. (Duthie, 11349 !) ; Pir Panjal pass or near it (Hügel); North side of Pir Panjal pass (Winterbottom !) ; Poshiana on the west side of the Pir Panjal pass (Winterbottom ! ; Banahal pass (Winterbottom.!). Kashmir, east of the Vale.—Razparen pass above Nowbug (Winterbottom !). Kashmir, north of the Vale.—Drawah pass, over the Kishenganga valley (Winterbottom !) ; Kaj Nag range at 10,000–11,000 ft. (Duthie, 10953 ! 11005 !) ; Dras at 10,000 ft. (Gammie !). Kashmir, north of the Indus.—Khapalu at 14,000 ft. (Hunter-Weston, 10243 !). District of Hāzara—Khaghan valley at 11,000 ft. (Inayat, 19951 !) and at 12,000 ft. (Inayat, 19959 *b* !) and at 12,400 (Inayat, 19960 *b* !) Chuppi in the Khaghan valley (Inayat !) ; Dadar in the Khaghan valley at 10,000 ft. (Inayat, 21963 *b* !) ; Makra in the Khaghan valley (Inayat, 21963 !) ; Siran valley (Inayat, 19960 *a* !).

The specimens are branched or unbranched, but generally unbranched, with lanceolate to broadly ovate three-veined lower leaves, and lanceolate to ovate-spatulate upper leaves which may, when relatively narrow, be conduplicate. The stem is stout: the leaves rather firm : the flowers large, with or without fimbriae ; the calyx-teeth ovate and slightly recurved at the tip, with a conspicuous scarious margin.

The fimbriation in the throat of the flowers is a mark of plants from the mountains to the south and east of the Vale of Kashmir, and is found in all of them ; but it is found in only one of the plants from the north, and in none from the west of the Vale. This observation is of great interest. In the following list the first named plants are those with narrowest leaves, and the last named with broadest leaves ; *i.e.* it is a series progressing from *G. marginata* of the Herbarium Indiae Orientalis to *G. Hugelii* : it will be seen from it that fimbriation of the flower is not associated with any particular character in the form of leaf. The reader will observe that the plants, at the beginning of the

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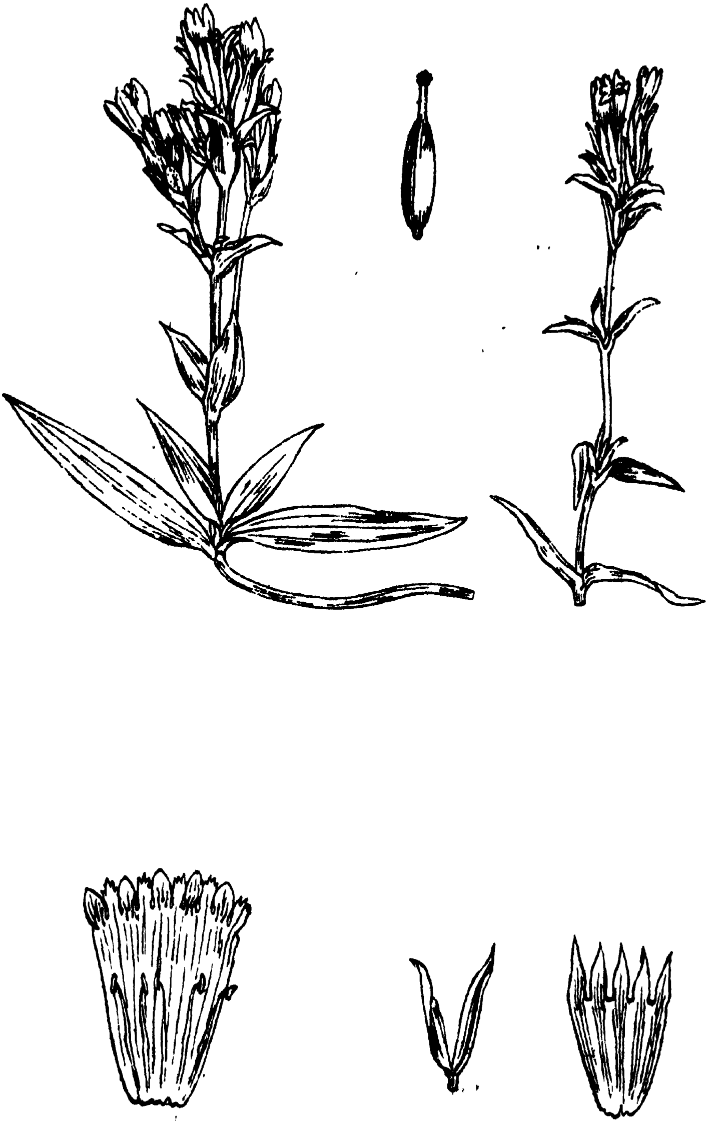
[1] The label may be read برۂ صدرو پرگنۂ ادون ۳ - جولی - ۱۸۳۸ or "in the pass of Sadru, pergannah Adon, 3rd July 1838." But the word read جوله may equally be interpreted جون or June, so hard to read is the writing. I have not been able to ascertain where Adon is ; but these dates are earlier than Falooner's journey across the Indus.

Origin.	Collector.	Altitude	Height of plants in cm	Dimensions of a large leaf in mm.	Fimbriæ.
Padri pass ...	T. Thomson.	8—10,000	2—5	20 × 6	Plentiful.
Parmaur valley ..	Lace.	10,000	6—9	37 × 8	None.
Khapalu ...	Hunter-Weston.	14,000	7—8	28 × 8	„
Khaghan valley .	Inayat.	11,000	9	25 × 6	„
Dras	Gammie.	10,000	5—8	20 × 7	„
Gulmarg ...	Aitchison.	......	5	18 × 6	Very plentiful.
Kajnag range ...	Duthie.	11—13,000	2—4	25 × 6	None.
Poshiana ...	Winterbottom.	......	4	24 × 8	Plentiful.
Banahal pass ...	„	......	8	25—9	Fairly plentiful.
Razparen pass ...	„	......	5	37 × 9	Plentiful.
Drawah pass ...	„	10,000	3—6	19 × 9	Fairly plentiful.
Chappri in Khaghan.	Inayat.	......	5—8	26 × 9	None.
Sadru pass ...	Falconer.	......	5—6	37 × 9	„
Dadar in Khaghan.	Inayat.	10,000	5- 11	32 × 13	„
Makra do. ...	„	......	3—5	20 × 7	„
Khaghan valley	„	12,000	3—7	30 × 10	„
Siran valley ...	„	...	4—5	24 × 9	„
Kajnag range ...	Duthie.	10—11,000	5—8	35 × 15	„
Gulmarg ...	„	11—12,000	4—6	20 × 11	Plentiful.
Gilgit expedition	Giles.	......	4—5	13 × 5	None.
Gulmarg ...	Gammie.	9,000	3-10	24 × 11	Plentiful.
Kashmir ...	Falconer.	......	8	27 × 13	„
Pir Panjal ...	Hügel.	......	9-10	27 × 12	„



Type 5. Specimen from Aliabad near the Pir Panjal pass (C. B. Clarke, 28961). The dissections × 2.

list, have a length of leaf that is four times the breadth, while plants at the end of the list have leaves that are about twice as long as broad. Between these two extremes lies every grade that is intermediate.

It may be remarked in passing that, despite Grisebach's incorrect diagnosis (see Stapf in this Journal, 1906, p. 337), C. B. Clarke intuitively placed Falconer's not-located specimen most correctly.

No. 5. Differing in the subacuminate leaves, from the series just defined, are specimens collected by C. B. Clarke and Dr. Aitchison. The localities are :—

Kashmir, south of the Vale.—Aliabad near the Pir Panjal pass at 11,000 ft. (C. B. Clarke, 28961 !). District of Rawal Pindi.—Mari (Hb. Aitchison !).

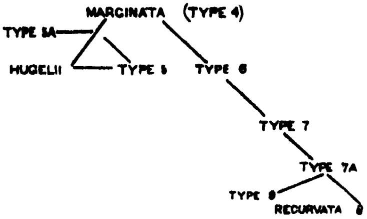
The flowers of both are fimbriate, and relatively large: the capsule is conspicuously crested. Unfortunately only one of the eight plants that lie to my hand has root-leaves. This one, collected by Mr. Clarke, I figure.

No. 5a. Next I refer to an erect, firm-leaved, unbranched plant collected in :—

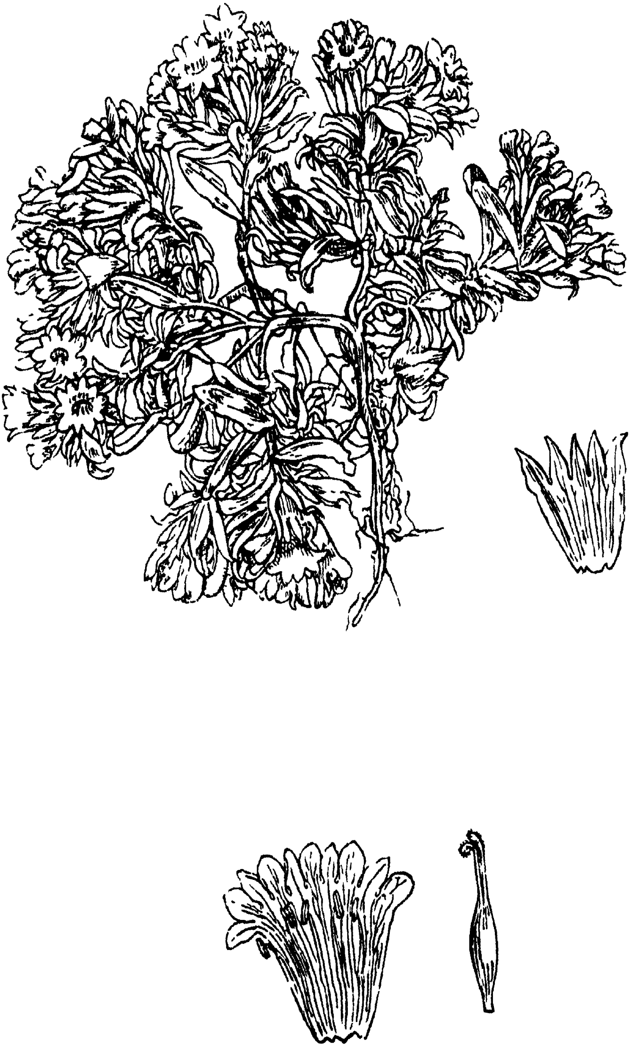
Kashmir beyond the Indus.—Gilgit (Tanner, 112*a* !) Sui in Gilgit (Tanner, 112 !).

It connects *G. marginata* with *G. marginta*, var. *recurvata*, having leaves somewhat like the latter, but the habit of the former. The typical lower leaves are 10 × 5 mm. and the margins are cartilaginous. There are no fimbriae in the flowers.

We now leave one of the series diverging from Hooker's and Thomson's G. marginata for the other. The reader may think of them like this—



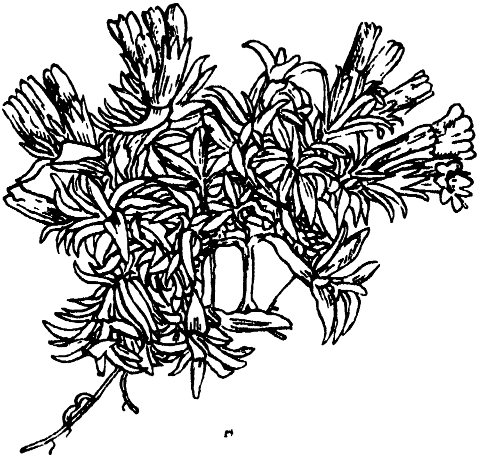
No. 6. Conspicuously herbaceous is the next plant, and with the scarious margin of the sepals reduced to a very narrow line. It branches from the root, and has lanceolate or lanceolate-ovate leaves. Its localities are :—



Type 6. Specimen from Shisha Nag (Duthie, 13328). Dissection × 2.

Chamba State.—Saichi, north of the valley of the Chenab at 10,000 ft. (Ellis, 1305! 1306!). **Kashmir, north of the Vale.**—Shisha Nag over the Liddar valley at 12,000-13,000 ft. (Duthie, 13328!); Matayan, south of Dras at 11,000 ft. (Gammie!). **Trans-Indus petty States.**—Lowari pass, north of Dir, at 11,500 ft. (Harriss, 16370!).

It links the Chamba race, No. 3, described above to the race that will be No. 7. The Chamba plants have fimbriate flowers, but not the others.



Type 7. Specimen from Musjid valley (Duthie, 13196).

No. 7. A little firmer in the leaves than type 9 and with them frequently conduplicate are the specimens from:—

Kashmir, north of the Vale.—Liddar valley above Kainmul, 11,000-12,000 ft. (Duthie, 13136!); Sogam valley in Lolab, at 13,000 ft. (Duthie, 13272!); Kamri valley near Kalapani, 11,000-12,000 ft. (Duthie, 12565!); near Ali-malik-Kemur[1] on the Deosai plains (Falconer!); on the north side of the Burzil pass[2] (Falconer!); Musjid valley at 12,000-13,000 ft. (Duthie, 13196!).

The flowers are altogether without fimbriae and with ovate anthers. They are not many together on the ends of the branches. The ovary has a conspicuous crest. The localities are all-

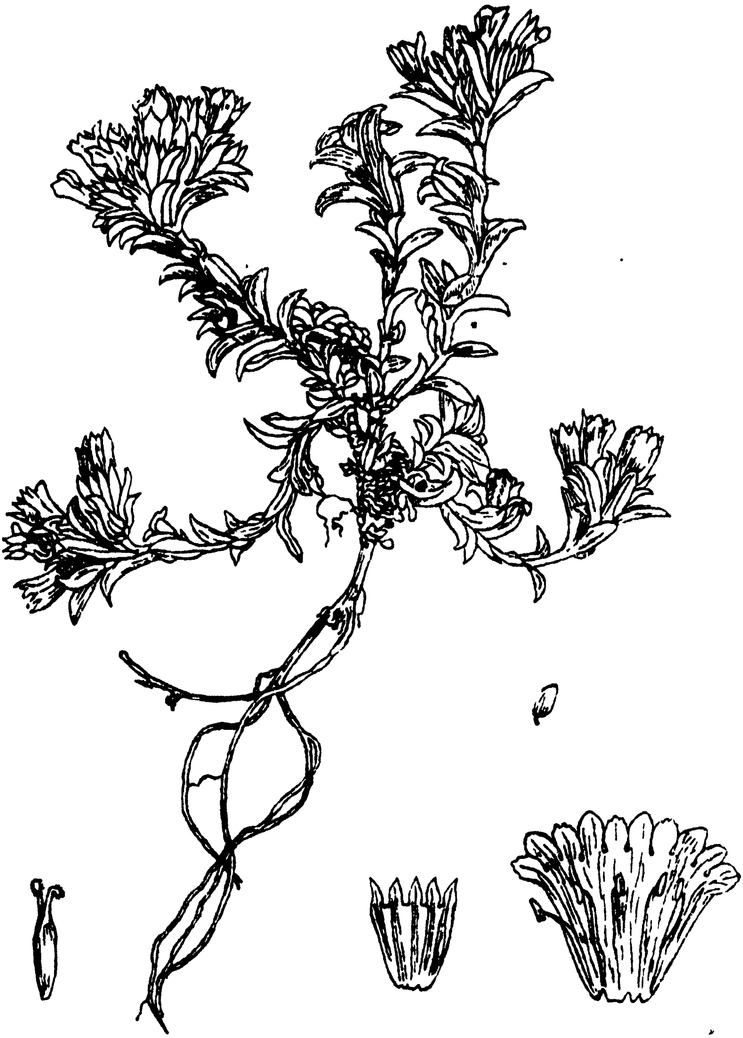
[1] The original label reads ازچکسلن کهتر تا علي ملک کے ماڈ ۷ - اگست - ۱۸۳۸ *i.e.*, from little Chaksalan to Ali-malik-ki-maid, 7th August 1838.

[2] The original label reads از برزله تا دیوهسو خورد ۴ - اگست - ۱۸۳۸ *i.e.*, from Barzaleh to little Daivehsu, 4th August 1838.

further west than are those of the last, and very similar, type, except the Lowari pass.

No. 7a. A plant collected in:—

Kashmir, north of the Vale.—Marpu nala, south of Dras, at 13,000–14,000 ft. (Duthie, 11817 !).



Type 8. Specimen from Gilgit (Giles, 182). Dissections of the flower ×2; seed ×8.

connects the last with the next, except that the throat is sparingly fimbriate.

No. 8. We now come to *Gentiana marginata*, var. *recurvata*, Kusnezow in *Acta Horti Petropolitani*, xv., 1906, p. 425, which I figure opposite from a specimen, collected by Captain Giles, of the number upon which Kusnezow founds his variety. When well grown it has many decumbent branches and is then a plant of distinct appearance; but in its smaller conditions it is not quite so readily recognised. The lower leaves have cartilaginous margins which become less and less firm as the leaves pass over to the bracts: the bracts have scarious margins. The variety is the extreme in western distribution and in the firmness of its leaves. It has been collected in:—

Kashmir, north of the Vale.—Kamri Kotal on bare places to 13,000 ft. (Giles, 132!); Kamri pass, 12,000-13,000 ft. (Duthie!). Kashmir, beyond the Indus.—Near Gargo in the Bogro valley (Conway!); Burmas nala near Gilgit (Roberts!).

The flowers of none of the specimens possess fimbriae.

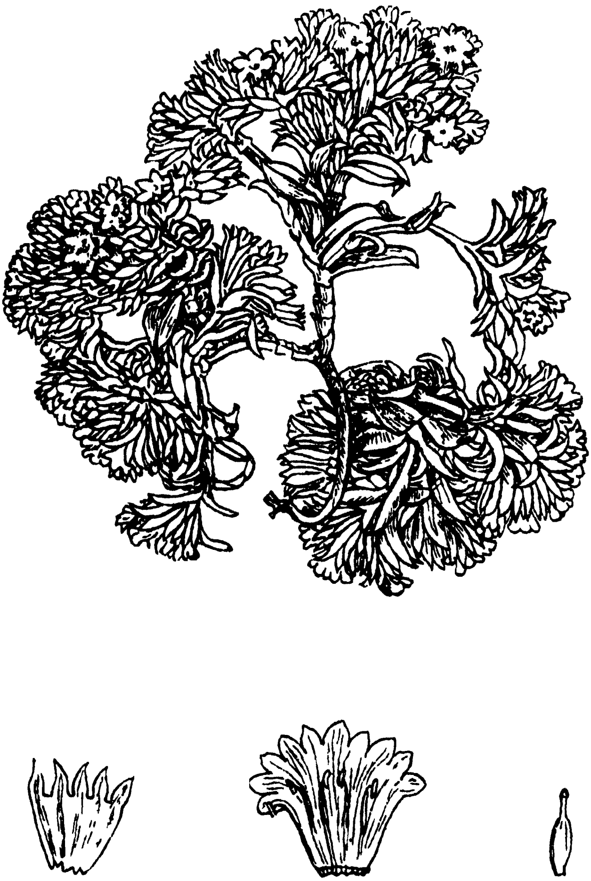
Earlier I have enumerated as race No. 7 plants from the Kamri valley, 11,000-13,000 ft., collected by Duthie: these will assuredly be found to intergrade by every transition with the variety *recurvata*.

No. 9. Very close to the variety *recurvata* come plants from the western border of Kashmir and the District of Hazara. They differ in the crowding of their flowers and in their lesser leaves. I give overleaf a drawing of a small plant: others are more branched. There are no fimbriae in the small flowers. The localities are :—

Kashmir, western border.—Bangas near Mozufferabad (Inayat, 21964!). District of Hazara.—Khaghan valley at 8,000 ft. (Inayat, 19959!); Khaghan valley at 13,000 ft. (Inayat, 19959 *a*!); Nila in the Khaghan valley (Inayat, 21964 *a*!); Siran valley (Inayat, 19961 !).

In addition to the specimens enumerated, the following all belong to *Gentiana coronata* (sensu ampliori); but not having the specimens to hand now, which I examined some time ago,—they are mostly in the Herbarium of the Royal Botanic Gardens, Kew,—I cannot assign them to the races above with full satisfaction :—

Simla Hill States.—Bashahr, head of the Sural valley near Pangi, 12,000–15,000 ft. (Harsukh!); head of the Hudan valley, 12,000-15,000 ft. (Harsukh!). Kangra District.—Lahul (Jaeschke!). Kashmir, south of the Chenab.—Neighbourhood of Siwaldhar pass, south-west of Badarwar (T. Thomson!). Kashmir, south of the Vale.—On the Pir Panjal pass at 11,000 ft. (C. B. Clarke, 28734!). Kashmir, east of the Vale.—Margan pass, 8,000–12,000 ft. (Meebold!). Kashmir, north of the Vale.—Pailgam in the Liddar valley (Meebold!); Aro, towards the head of the Liddar valley (Meebold!); Tragbal, north of the Wular lake, at 10,200 and at 11,400 ft. (C. B. Clarke, 29238! 29278!); Tilel at 12,500 and 13,750 ft. (C. B. Clarke, 30673! 30808). Kashmir, beyond the Indus.—Karakoram mountains at "Ogre's camp," 14,330 ft. and at "boggy camp," 13,698 ft (Conway, 210! 214!); Gilgit, Sang-o-sir (Giles!) Hazara District.—Siran valley at Shankiari, 14,000 ft. (Inayat!); Gali in the Siran valley (Inayat!). Trans-Indus petty States with Chitral.—Chitral (Barrett!) Chinese Turkestan.—Kashgar (Bellew!)



Type 9. Specimen from the Khaghan valley (Inayat 19959a). Dissections × 2.

I conclude from my study of the Gentiana that we apparently have in it a species in the state of breaking up into sub-species, partly in response to the dryness increasing toward the north-west of the hills that it inhabits, and almost certainly to other circumstances not yet to be guaged. The increasing dryness of the climate is exhibited in the increasing firmness of the leaves as we go north-westward, and in their greater tendency to be conduplicate. Fimbriation in the flowers is the rule in the hills nearest to the plains; and on the range, south of the Vale of Kashmir, it seems to be the only condition: elsewhere on the hill-ranges back from the plains fimbriate flowers occur here and there: they occur in Bashahr, where there are non-fimbriate plants, nearer to the plains than they, on the mountains of Kedarkanta and Marale: they occur on the Pensi-la, near Dras in the Marpa nala, and on the Drawah pass, which localities are farther from the plains than the Shisha Nag, Kainmul, Matayan, Sogam, the Kaj Nag and Mozufferabad, whence come non-fimbriate plants: but the localities farthest back are all localities for non-fimbriate plants.

The crested capsule is a mark of the species. The crest develops after flowering and is only just indicated in the figure on page 157.

The limits of the distribution of the species are within the Himalaya, west Nepal, and with apparently Kashgar. In Kashmir it is found right back to the water-parting; but eastwards it has not been obtained far back in the mountains It seems strange that it has not been obtained in Kulu, whereas several travellers have obtained it in adjoining Lahul, and it occurs in Bashahr on the other side of Kulu.

Flowering occurs generally in May and June in the eastern part of the plant's area of distribution; but very many of the specimens from the western part are specimens collected in July and August. One of the eastern specimens was collected in flower in August.

I find it not uncommon for a little pellet of earth to have been washed into the flowers apparently by the spattering of sudden squalls of rain that have caught the flowers open.

I think one may signal out for their diversity within the species three extremes:—

1. Type 1. See the figure on p. 150 which is the most south-eastern form.

2. Type 8. See the figure on p. 164 which is the most north-western form.

3. Type 4. See Dr Stapf's figure on p. 377 of this *Journal* for 1906, which is the *G. Hugelii* of Grisebach.

A glance successively at the figures above of type 9 (p. 166), type 7 (p. 163), type 6 (p. 162), and type 4 (p. 157), will show the reader one line of divergence, and another glance at type 4 and then at Dr. Stapf's figure will show another. A comparison of the figure of type 5 given on p. 160 with Dr. Stapf's figure will suggest an obvious linking of these two, and a comparison of the figure of type 3 with Dr. Stapf's figure and again with that of type 4 will suggest another linking together. A comparison of type 2 with the figure on p. 157 will connect it with marginata, and, lastly, a comparison of the figure of type 1 may be made with the figure of type 5 and with type 4 will link up the remaining outlying forms.

27. Well-waters from the Hadhramaut, Arabia.

By DAVID HOOPER, F.C.S.

Travellers in Southern Arabia have noticed the great fertility of lands irrigated with mineral water issuing from subterranean lakes. The rainfall in that part of the country is so scarce and irregular, and can never be depended upon, that the principal means of obtaining water for drinking purposes as well as for cultivation is by sinking wells. A *ghail*, a running stream or rill, is a rare phenomenon in Arabia; but they are occasionally met with when a rock bed is not far below the sand. Ghail Omr and Al Ghail, however, are important supplies; the first comes from Wadi Loban and is considerable, and the second rises at an altitude of 2,000 feet at the head of the Wadi Howeri.

The Hadhramaut is a broad valley running for 100 miles or more parallel to the coast, and collects under the sand any water derived from the high Arabian tableland, very little, if any, reaching the sea towards which it slopes. In this valley a few wells occur which are important from an agricultural point of view, and around which one or two villages have grown. It cannot be said that the villages are prosperous. They are walled strongholds with outbuildings belonging to the proprietors of the land. The fear of the Bedouin prevents an extensive population.

Mr. F. Noël-Paton, Director-General of Commercial Intelligence, during a visit to Southern Arabia a few years ago, was struck with the fertilising properties of the mineral water of Hadhramaut, and especially with the fact that some of the finest tobacco in the world is grown in that region. His valuable remarks on the supply may here be reproduced. He says: "The sources appear to be so much parts of one system that I should be surprised to find any difference in the analyses of the waters. The 'rivers' are aqueducts cut down into the solid rock to a very considerable depth. They extend over considerable distances, and are so well executed, that they represent an enormous expenditure of labour over a long period of time; but they are of such an age that no one in the country was able to relate even a tradition as to how they came into existence. The workmanship is apparently identical with that seen at the tanks at Aden and the rock-temples in Egypt, and it indicates considerable engineering skill, for arches in the rock are left at regular intervals to prevent the sides of the channel from falling in. Historically the works are very suggestive. There appears to be a great subterranean volume of water, and in two places, where the crust of the desert has fallen in, there are lakes of mineral water which showed no discoverable signs of a fall of level, although no rain had fallen in that country for five years. The water is so rich in salts that the banks of the irrigation ditches are largely formed of crystalline matter left by evaporation and scraped out by the cultivators. There appear to be thousands of tons of this saline deposit available."

Mr. and Mrs. Theodore Bent visited this locality in the winter of 1893-94, immediately after Mr. Noël-Paton's visit. Mr. Bent describes (Southern Arabia, 1900, p. 200) Ghail Babwazir, a town reached after travelling three hours from Gambla:—

"Ghail Babwazir is an oasis or series of oases of rank vegetation caused by a stream, the water of which is warm and bitter, and which is conducted by channels cut in the rock in various directions.

"Acres and acres of tobacco, bananas, Indian corn, cotton and other crops are thus produced in the wilderness, and this cultivation has given rise to the overgrown village.

"The stream was discovered about 500 years ago by one Shaikh Omar, and before that time all this part was waste ground.

"This fertilising spring rises under a hill to the east, where a large reservoir has been dug out. Above on the hill are some Arab ruins, places where things were stored, and there is a road up. Canals, cut some twenty feet deep like the *kanats* of Persia, conduct the water to the fields. The chief product is tobacco, known as Hamoumi tobacco."

The Hamoumi, it might be explained, are a small, poor tribe of Bedouins who occupy the lower end of Wadi Adimi. They hire out camels to caravans, and largely engage in the carrying business. Mr. Noël-Paton informs me that "Hum-mi" is the name recognised in the eastern tobacco trade and that the leaf goes largely to Constantinople and Egypt for use in the *narghili* or hubble-bubble.

Last year Mr. Noël-Paton took steps to procure samples of this water for chemical analysis and succeeded in obtaining them through the Resident at Aden. They were collected from three springs within a mile or so of Ghail Ba Wazir, some nine or ten miles west of Shahar. The Governor of Mokalla, who had the samples collected, informed the Resident at Aden that there are hot sulphur springs at Shahair on the coast half-way between Mokalla and Shahar. As an indication of the geological formation of the country, Bent records the occurrence of gypsum hills in the neighbourhood of Ghail. Mr. Noël-Paton confirms this, and adds that there are also considerable masses of gypsum in the plains, one's attention being drawn to its existence by the peculiar hollow sound made on it by the hoofs of the horses. The presence of this mineral accounts for the sulphur vapour in the springs and the large amount of sulphates found in the water.

The bottles of water were forwarded to the Reporter on Economic Products and were handed to me for examination and report.

The samples of water were contained in ten bottles and collected (according to the labels) from the spring-head and main stream of three sources, named respectively Hārith, Ferath and

Sidā. A saline deposit occurred in some of the samples, and three waters from the spring-heads were strongly impregnated with hydrogen sulphide. The total solid residue varied from 304 to 415·5 parts per 100,000; the smaller amounts being found in the water as it issued from the wells and the larger quantity being found in the running streams. Eliminating the samples containing the sulphur gases, there is seen to be a close agreement in the composition of the three waters, the difference being due to concentration owing to the evaporation of the water over the hot beds of the streams. The analyses of the samples from the main streams of the three sources revealed the following constituents :—

	Total solids.	Lime	Magnesia.	Potash	Soda.	Iron.	Chlorine.	Sulph. Acid.	Nitr. Acid.
Hārith...	415·5	96·88	9·55	20·60	59·21	2·8	46·5	145·3	·19
Ferath...	383·8	94·96	9·72	18·92	54·39	2·0	30·9	146·2	tr.
Sidā ...	409·6	87·50	11·10	17·37	58·83	2·5	35·5	151·1	·11

Calculating from the average of the above analyses one hundred parts of the saline residue would probably contain the following salts :—

Sodium sulphate	32·7
Calcium sulphate .	13·5
Potassium sulphate .. .	8·6
Magnesium sulphate ...	7·5
Calcium chloride .	16·2
Calcium carbonate ...	15·6
Iron phosphate ..	·6
Nitrates	trace
Combined water, silica, etc. ...	5·3
	100·0

I am unable to trace any previous analyses of Arabian well-waters to compare with the composition of these from the Hadhramaut coast except that of the sacred well at Mecca (Greshoff in *Journ. Chem. Soc.*, 1898, A. 11. 614). Here the solids vary from 316 to 359 parts for 100,000, and considerable quantities of nitric acid and chlorine replace the sulphuric acid found in the Ghail wells. In the Nubian Desert similar saline water with large quantities of sulphates are found in wells sunk in the sand-gravel detritus (*Quart. Journ. Geol. Soc.*, 1897, 53, 374).

The amount of hydrogen sulphide determined in the three samples taken from the wells was 8·46, 7·2 and 12·2 parts in 100,000. These are equal to the amounts found in sulphur springs of Sandefjord, Norway, and of Sicily.

The fertilising properties are probably due to the presence of potash and lime salts, and the action of the sulphates in liberating the alkaline constituents from the soil. In this respect the composition of the waters differs widely from that of Indian well-waters, examined by Leather from Gujerat, which are specially suitable for tobacco cultivation (see *Agricultural Ledger* No. 14 of 1895). It was shown that the value of these waters depended mainly upon the amount of nitrates they contained. In the Hadhramaut water there is only a minute quantity of nitrate present, and we can only conclude that the large quantity of alkaline sulphates, as shown in the above analyses, is, in this part of the country, extremely useful in the cultivation of high class tobacco.

28. The Birds' Complaint before Solomon: being an extract with a translation from the *Kitāb*^{u} *'l-Jamharah fī 'ilm*^{i} *'l-Bazyarah.*[1]

By Lieut.-Colonel D. C. Phillott and Mr. R. F. Azoo.

It is said that once, by the inspiration of the Almighty, the birds went to the Prophet of God, to Solomon[2] the son of David (peace and blessings on both of them), and saluted him with all reverence and said: "Oh Prophet of God! we have come before thee, and stand here in thy presence that thou mayest regard us as thou regardest the rest of thy subjects, and mete out full justice to us, commending us to each other's care, and directing that no bird, either in the heavens or on the earth, should oppress another; for we are now complaining to thee about four species of birds, well known to us all. The first is the Hawk,[3] who has succeeded in gaining the affection of man, and has risen in station to the highest degree, having no other footstool for his[3] feet than the hand of kings, so that he now speaks not to us from pride, nor answers us out of hauteur and grandeur. We entreat thee to ask him what the cause of this silence is: to what is it due? The second bird is that hated bird known to men by the name of 'Owl.' He dwells secluded in ruins and avoids habitations, nor does he repair to branched trees; and when we ask him the reason for this he says no more to us than '*Yā hū yā hū*.'[4] We entreat thee to ask him what is the meaning of this expression, and to whom he alludes in these words. The third bird is the Raven; he has no garb but black, and no cry but mourning for those separated; and he is familiar only with ruined habitations and mourning over relatives and friends. So we entreat thee to ask him what this lamentation is, and the cause of this lone wandering. The fourth bird is the *Bulbul*.[5] Now we wonder at him and object to his doings, for he keeps quiet the whole winter, looking dully on the world; but the moment he sees the vine bear, he is seized with joy and passion. Now this is the way of libertines, and we cannot approve of this; so we entreat thee to ask him why he sings not, except in the season of fruits and flowers and warbling of birds."

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[1] See also Jl. As. Soc. Bengal, Vol. III, No. 1, 1907.

[2] Solomon understood the speech of birds and animals.

[3] *Bāz* here a general term, but by falconers applied specially to the goshawk. In Arabic *bāz* is masculine, but in India the word denotes the female goshawk.

[4] *Yā Hū* (Jehovah) "O Thou who art existent," *i.e.*, God.

[5] *Bulbul*, *i.e.*, the *bulbul* of India and not the *hazār-dāstān* or nightingale of Persia, which is also called *bulbul*.

Then Solomon was surprised at their language and pondered on their intelligence and their way of putting things,[1] and replied, "I will see that you obtain your wishes in this. and I will put your questions to those against whom you have lodged objection."

He then summoned the first, namely, the Hawk, who at once obeyed the summons and said, "Oh Prophet of God! what willest thou? I will not turn aside from thy behest."

Solomon said, "A company of the birds objects to thy declining to speak to them, and asks thee to give them thy reasons."

The Hawk said, "Oh Prophet of God! the tongue often slips, and man has been born merely to act; for God loves only those among men that are doers, and closes the door in the face of all talkers that do not act." Then the hawk recited in verse:—

> "Those that are slothful we approve not;
> We approve only those that are doers
> Everyone whose habit is obedience to us,
> He is accepted and his sins forgiven him."

Then Solomon summoned the second, namely, the Owl, and said to him, "Oh odious bird! why dost thou seclude thyself in ruins, avoiding habitations; and why hast thou forsaken the companionship of birds on branching trees?"[2]

The Owl said, "Oh Prophet of God! He that regards the world is seduced, and he that knows that he will be called to account for his actions, is sorrowful; so I busied myself with the thought of the One I fear and the One I dread; and I love no other friend but Him, and there is none in my heart except Him (*Hū*). So praise be to Him of whom it is said there is none but Him (*Hū*)." Then he added:—

> "Repeating the name of the only God is food for the souls of those that are lost in His love.
> Their bodies are emaciated through their fear of God, and through the sallowness of their cheeks they have risen to high eminence"

Then Solomon summoned the third, namely, the Raven, and said, "Oh bird-of-sorrow, styled unhappy! Why dost thou wear the garb of mourning when it is the garb of those separated from their loved ones?"

The Raven said, "Oh Prophet of God! the careless have remembered their departure from this world and the pangs of impending death[3]; for I have never seen a company but it dispersed, nor a society but it scattered; and this world has no real value, 'and the life of this world is but a passing life.'"[4] Then he added:—

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[1] *Nizām*; not an appropriate word here.

[2] الطيور ذات الأفنان; there appears to be an omission in the text. ذات الأفنان might possibly be taken to mean "of different classes."

[3] Apparently the Raven refers to himself by the term "the careless." The meaning of the Arabic is not clear.

[4] *Qur'ān*, *sūrah* xiii, *āyah* 26.

> "The world cries to herself (but there is none among men to listen) saying
> 'How many a hope have I destroyed, and how many a hoarder's hoard have I scattered abroad!
> How many a corpse have I buried beneath the ground!
> Long have I done this but no tear came to my eye.'"

Then Solomon summoned the fourth, namely, the *Bulbul*, and said, "The birds, in thee, object to that which they object to in libertines and debauchees, for thou joyest not except after tasting the vine."

The *Bulbul* said, "Oh Prophet of God! I cry not through joy of wine, but I cry in wonder at the drinker, since wine corrupts one's faith and angers the Lord, makes the wise foolish, and degrades the noble. When the sage drinks or the fool gulps it down, he first dances like an ape through buffoonery, and next piddles foully like a dog; and then, acting filthily like a pig, rolls in the dust and lies in the road, an object of pity to friend and foe; forgetful of the Abode of Peace[1] and wearing on his neck the order of faithlessness to his Faith, and being deserving of being given pus to drink, which is the drink of the damned and—Ah for the bitter disappointment of him that is void of all virtue and takes delight in a draught whose dregs are madness! But blessed is he that has planted in his heart the vine of 'Desire' (*Shauq*)[2] and has trained it over the tree of 'Delight' (*Ẕauq*),[2] so that the sap of 'Emotion' (*Ṭarab*)[2] has coursed through its branches, and it has yielded a wonderful crop, while the breeze of 'Seeking after Knowledge' (*Irādah*)[3] has breathed on it, adding to its sweetness till it has reached in height the final stage of 'Rapture'[2] (*Wajd*)[4] and 'Chant' (*Samā'*[5]), when its grapes are plucked by the fingers of 'Fidelity,' (*Wafā*) and cast into the vessels of 'Content' (*Riẓā*) and pressed with the press of 'Resignation under Calamity' (*Aṣ-Ṣabr*^{u} *'ala 'l-Balā*), till there is extracted a wine unlike any human wine, for that one is lawful and the other not."

Then the *Bulbul* added:—

> "What a wine our cup-bearer has,
> For he has made us drunk before he gave us to drink
> His cups are our ears at all times
> And the water with which he dilutes[6] his wine are our tears."

(Blessed is he who is aroused from sloth by his own heart and not by the wisdom preached by birds).

So Solomon (on whom be peace) wondered at their speech, and pondered on their sagacity and their well-expressed ideas, and said: "The Hawk does well to keep an instructive silence; and the Owl has excelled in his truth and wisdom; and the Raven is right to lament and to wander alone, and the *Bulbul* is right in the exposition of wine." And this is the story of the birds, and praise be to God alone, and blessings on our Preceptor *Muḥammad* and on his Family.

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[1] The Abode of Peace, i.e., Heaven; not Baghdad.

[2] All these are *Ṣūfī* terms.

[3] *Irādah* from which *murīd* is derived.

[4] *Wajd*, when the soul meets with God in ecstasy.

[5] *Samā'* the chanting and rotatory dance of certain sects of dervishes.

[6] From Arabic poetry it appears that it was the usual custom of the Arabs to dilute their wine.

فصلٌ — قيل اتت الطيور بالهام الملك الغفور الى نبيّ الله سليمان ابن داؤد عليهما الصلوة والسلام فحيّوه بتحيّة الإكرام وقالوا له يا نبيّ الله قد جئنا اليك ووقفنا بين يديك لتنظر الينا كنظرك الى سائر الرعيّة وتعدل فينا بأحسن قضيّة وتوصيّ بعضنا ببعض ولا يتعدّى طائر على طائر في رفع ولا خفض فانّا نشكو اليك اربعة من الطيور ذكرهم بين اجناسنا مشهور - فأوّلهم هذا الباز الذي هو بمودّة بني آدم قد فاز وارتقى في المنزلة الى اعلى مكان ولا سرير لقدميه غير يدي السلطان فهو يصمت عنّا كبرا ولا يجيبنا عزّا وفخرا فنسألك ان تسأله ما هذا الصموت وما سبب هذا السكوت . والطائر الثاني هوالطائر المذموم المسمّى بين بني آدم بطير البوم انفرد بالخراب دون العمران ولا يألف الى الاشجـــار ذوات الغصون والأفنان واذا سألناه عن سبب ذلك ما هو لا يزيدنا عن قوله يا هو يا هو فنسألك ان تساله ما هذه العبارة والى من يشير بهذه الاشارة . والطائر الثالث هو الغراب فانه ليس له حلّة الا السواد والنوح على اهل البعاد ولا يألف الا المنازل الخراب والنوح على الاهل والاحباب فنســألك ان تسأله ما هذه النياحة وما سبب هذه السياحة . والطير الرابع هو البلبل فانّا منه معجبون ولافعاله منكرون لانه لا يزال طول الشتاء ساكتا والى الدنيـــا باهتا حتى اذا عاين شجـــرة العنب اخذهُ حدّة الفرح والطرب وهذه صورة الفاسق ونحن على ذلک لا نوافق فنسالك ان تسأله لم لا يصيح الا ايام الاثمار واوراد الاشجـــار وتغريد الاطيار فعجب نبيّ الله سليمان من كلامهم وتفكّر في فطنتهـــم ونظامهم وقال سوف ابلغكم المراد فيما ذكرتم واسال من انكرتم عليه ما قلتـــم . ثم دعا بالاول وهو الباز فانتهز الى امره اي انتهاز وقال

يا نبيّ الله ما تريد فاني عن امرك لا احيد قال ان جماعة من الطيور ينكرون امتناعك عن خطابهم ويسألونك عن جوابهم فقال يا نبي الله اللسان كثير الزلل وما خلق العبد الا للعمل لان الحقّ لا يحبّ الا العمّال من الرجال ويغلق الباب في وجه كل قوّال غير فعّال ثم قال *

نحن لا نقبل اصحاب الكسلْ * انّما نقبل اصحاب العملْ
كل عبد دأبهُ طاعتنا * فهو مقبولٌ ومغفور الزّللْ

ثم دعا بالثاني وهو البوم فقال ايها الطائر المذموم لم انفردت بالخراب دون العمران وتركت مصاحبة الطيور ذات الافنان فقال يا نبي الله من نظر الى الدنيا فُتِن ومن علم انه مطالب بعمله حزن فاشتغلت بمن اخافه واخشاه فلا احبّ حبيبًا سواه وان ليس في سري الّا هو فسبحان من لا آله الّا هو ثم قال *

ذكر الذي لا آله الّا هو * قوت اناسٍ في حبّه تاهوا
انحل اجسادهم بخوفهم * فباصفرار الوجوه قد باهوا

ثم دعا بالثالث وهو الغراب فقال ايها الطائر الحزين والمنعوت بالمسكين لم لبست الحِداد وهو لبس اهل البعاد فقال يا نبيّ الله ذكر الغافلون خروجهم من الدنيا ونغصهم بمصارع البلوى لاني ما رأيت شملا الا تفرّق ولا جمعًا الا تمزّق وان الدنيا قليلة الانتفاع وما الحيوة الدنيا الا متاع . ثم قال *

قد ناحت الدنيا على نفسها * لو كان في العالم من يسمعْ
كم آملٍ افنيتُ آماله * وجامعٍ شتّتُّ ما جمّعْ
كم غائب غيّبت تحت الثرى * مدًى فلم يحضر ليَ مدمعْ

ثم دعا بالرابع وهو البلبل فقال ان جماعة الطيور ينكرون عليك ما ينكرون على اهل الفسق والفجور لانك لا تطرب الا اذا اكلت شجرة العنب قال يا نبي الله ما صحت طربا الى شربها وانما صحت عجبًا من شاربها لأنها مفسدة للاديان مغضبة للرَّحمٰن تسفِّهُ الحليم وتزدري بالكريم واذا شربها العاقل وتجرَّعها الجاهل فهو في اولها يرقص كالقرد متمسخرا وفي انتهائها يبول كالكلب قذرا وفي آخرها يدعو كالخنزير متعفرا ملقًّى على الطريق يرحمه العدوّ والصديق قد نسي دار الأُمان وتقلّد بقلادة نقض الايمان واستحق شرب صديد اهل النيران فيا خيبة من حرم الافضال واستلذ بشربة آخرها طينة الخبال و يا طوبى لمن غرس في قلبه دالية الشوق وعرَّشها على شجرة الذوق حتى جرت فيها مياه الطرب وظهر فيها من كل عجب وهبَّت عليها نسائم الارادة فأنشأً في حلاوتها زيادة وبلغت في الارتفاع الى انتهاء الوجد والسماع ثم قطفت بانامل الوفاء وجعلت في اوعية الرضاء وعصرت بمعاصر الصبر على البلاء حتى ظهر منها مدام ليست كتلك المدام هذه حلال وتلك حرام ثم قال :

ايُّ شرابٍ عند ساقينا * اسكرنا من قبل يسقينا
كؤوسه اسماعنا دائمًا * ومزجه دمع اماقينا

طوبى لمن ايقظته حكمة الأفكار لا حكمة الاطيار. قال فتعجب سليمان عليه السلام من كلامهم وتفكر في حكمتهم ونظامهم وقال لقد احسن البازي في صمته واشارته والبوم في حقيقته وحكمته والغراب في نياحته وسياحته والبلبل في شرحه لمدامته . وهذا حديثهم والحمد لله وحده وصلى الله على سيدنا محمد وآله *

29. Note on the Saker or Cherrug Falcon (*F. Cherrug*).

(Plates III and IV.)

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

By Indian falconers the female of this falcon is called *chargh*[1] and the male *chargh*ela, but by Pathans and Afghans both sexes are styled *charkh*. By Persian falconers the 'passage' or wild-caught falcon is called *bālābān*, the 'eyess' or nestling being distinguished by the term *charkh*. Arabs call this falcon *saqar*[2] (plural *suqūr*), the origin of the name sacre or saker,[3] the name by which it was known to old English writers on Falconry: the Arabs further distinguish different varieties or races by different names. In Basrah and Baghdad the "white" variety with drops on its back is called *Ḥurr Fārsī*[4] (or the Persian); another variety, reddish in tinge, is called *Ḥurr Shāmī* (the Syrian); the dark variety with drops on the back is *Wacharī jarudī*; and the dark variety without drops *Wacharī*[5]; while the "booted" variety is incorrectly called *Shunghār*.[6] The Turki name of this falcon, especially of the female, is *aitalgu* or *itālgū*.

More than one race visits the Panjab in the cold weather. Individuals so vary in size, shape, colouring, and markings, that it is at first sight difficult to realise that they are of the same species. Some birds, mature and immature, have white heads with the tail full of drops as large as a three-penny piece; others have white marks on the back; while a few are *yak-rang* or almost whole-coloured. In some varieties the tail-spots are scanty and barely visible; in others they are so white and numerous that the spread tail appears to be nearly quite white. When the two centre tail-feathers, the "deck-feathers" of old English and the *'amūd* or "props" of Arab falconers, are devoid of any spots, the bird is styled by Indian falconers *lagar-dum* or "tailed like the *Lagar* Falcon," and by the Arabs *muṭlaqu 'l-'amūd*, or "with the props unmarked." Even when the saker is 'whole-coloured' there are sometimes a few white specks like pin-points on some of the wing-feathers, and these are called by Arab falconers "Pleiades." The "white" variety, with many white marks on the back, is in the immature plumage known to falconers of the Kapurthala State in the Panjab, by the term *chītal chargh*. This variety is considered by them deficient in courage and unsuitable for that most difficult of all quarries the common kite (*Milvus govinda*). Indian falconers are great believers in colouring, and even English falconers have their prejudices. The present writer objects to "white" *charghs*—not to those with merely white heads and tails—as in his experience such birds are soft. Pigeon racers in Europe reject certain colours, and presumably do so from experience. However, no great reliance is to be placed on any special colouration in passage-*charghs*. Some old birds are marked very like young kestrils, and the statement of Kapurthala falconers that such birds were "*chītal charghs*" in the immature plumage is probably correct. In "Lahore to Yarkand," the account of the Government Mission of 1870, there is a coloured figure of "*Falco hendersoni*" that has the appearance of being merely a specimen of an old bird of this variety.

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[1] By Englishmen in the Panjab it is generally called *cherrug*.

[2] In speaking often pronounced *sagar*.

[3] The tiercel was called a "sacret."

[4] *Ḥurr*, "noble," is an adjective applied to certain hawks, but as a *substantive* it means the young of certain animals.

[5] The *wacharī jarūdī* is preferred to the *wacharī*. The best varieties for gazelle are said to be the *Fārsī* and the *Shāmī*.

[6] The *Shunqār* or *Shunghār* of old MSS. was a species of Jer-falcon; *vide* Jl. As. Soc. Bengal, Vol. III, No. 8, 1907.

Peculiarities of plumage may disappear to a great extent in the moult. The colouring of the 'intermewed' falcon depends to a great extent on feeding and exposure. 'Haggards' vary, nearly if not quite, as much as do the 'sore-hawks.'

A variety of saker that does not appear to have been yet described is said to be feathered on the tarsi and feet like "certain breeds of pigeons." Amongst the professional falconers of Pindi Gheb this variety is called *sang-sang*, but amongst falconers of the Derajat it is distinguished by the adjective *pā-moz*,[1] which may be translated "booted." Arab falconers of Basrah incorrectly call this variety *Shunghār*, a name (probably of a species of Jer-falcon) familiar to them from old Persian MSS. on Falconry. I have not personally met with this variety, but one English falconer told me that he had owned and trained three, and many Punjabi and a few Arab falconers have assured me that they had personal knowledge of its existence. A Punjabi falconer tells me that the flight-feathers and pendent feathers in specimens he has seen were longer than in the ordinary saker, but that otherwise the plumage did not differ.

The author of the *Bāz-Nāma-yi Nāṣirī* mentions a species or a variety of saker that he says he has met with only in the vicinity of Baghdad. The flight-feathers, he states, are dark in colour and extend beyond the tail, and the bird has an outward resemblance to the Hobby. The female is about the size of a tiercel of the ordinary species of saker, and is nearly as swift as a *shāhīn*. He says it takes black-partridge and stone-plover with ease, while some few there are that will take houbara. I questioned some Indian and Persian falconers of Baghdad on the subject, but they all seemed ignorant of the existence of this species.

Though the plumage of the mature and immature saker is said not to differ, even an inexperienced falconer could distinguish between young and old birds, side by side. It is sometimes difficult, however, without such comparison, to distinguish a bird of one moult. In a bird of one or of two moults, the colour of the cere and feet is much the same as in the immature bird; but sometimes the colour is lemon-yellow or greenish-yellow. In very old birds the colour is deep orange. In the immature bird the colouring of the back is in appearance uniform, though a close inspection will reveal a reddish-brown edging to the feathers. In a moulted bird not only is this edging more marked, but also, when the bird is newly caught and in good condition, a side-light will show up a bluish tinge in some of the back feathers. Sometimes, too, a minute examination will discover one or two old feathers remaining in the breast.

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[1] *Pā-moz* is a pigeon-fancier's term for pigeons with feathers on the feet.

The general colouration of old birds is of that reddish nature common to so many desert animals. I once found a lost saker seated with drooping-wings on a dead houbara, which she had dragged into the friendly shadow of a neighbouring bush. It was her silent crouching attitude that first made me suspect the presence of a distance soaring eagle. On another occasion, when hawking in broken ground, both saker and houbara disappeared from sight over a low ridge into a small plain beyond. By the time we reached the crest of the ridge nothing was in view. Then, first one and next a second scavenger-vulture, leaving a distant peak, passed by us and circling singly over one particular spot in the bare and open plain, silently returned to their resting-place. Next came a solitary raven, which repeated the manœuvre with significant croakings. Though nothing was visible, we rode down to the spot, when our eyes becoming as it were unexpectedly focussed, a rock on the ground assumed a sudden resemblance to a falcon. A close examination revealed a large cock houbara concealed beneath the lost hawk's still and drooping wings, so completely did the colouring of hawk and quarry harmonise with the ground. Is even this large and powerful falcon in need of the mantle of protective colouration or has it assumed a desert-coloured garb merely out of sympathy with its surroundings? Certain it is that it is often robbed of a meal by eagles and jackals, not to mention members of its own species. A Muslim friend tells me that one bird I sent to him as a present was killed by a wild cat, which sprang upon it under the very nose of the falconer, after the hawk had brought down an houbara. Eagles, too, soaring out of sight, drop like stones from their invisible posts, and not only rob but sometimes even kill the hawk. By them, too, the jesses [1] are sometimes mistaken for quarry.

Plate III., figure 1, is reproduced from a photograph of an exceptionaly large female, *very* dark variety, in the immature plumage; while figure 2 is from a photograph of an ordinary brown bird, whole-coloured; with a Panjabi hood.

Blanford describes the bill of *F. cherrug* as being "pearly white [2] tipped with black," and the legs of the young bird as "greyish green." In some hundreds of trained birds that I have handled and examined, the bill has always been a blue slate colour, light at the base, but deepening to almost black at the tip. The legs, too, and the feet, and the skin round the eyes of the immature bird are usually a distinct blue or slate-colour: only in a few of the young birds is the colour greenish-yellow or yellowish-green. In old birds, except in some moulted in confinement, the cere and legs, etc., are orange. In the immature saker the colour of the legs and cere is bluer than in the young peregrine.

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[1] Persian MSS. for this reason frequently warn the reader against jesses of red leather.

[2] A hawk-catcher tells me that he once caught a healthy saker that had

Compared with the peregrine the *chargh* has the tail longer in proportion; the head broader and rounder and not so snake-like, the eyes perhaps larger but not so prominent, the beak and feet smaller, but the toes thicker: the flight-feathers have a softer shaft, and the plumage of the underparts is more fluffy, while even the feathers of the back are not so tight and close and suitable for resisting wet. In the female saker the number of large scales on the middle toe is usually 14 or 15, while in a peregrine it is 17 or 18.

Plate IV, reproduced from a photograph, shows the comparative size of corresponding tail- and flight-feathers of a saker and a peregrine, fig. 1 being the flight-, and fig. 4 the tail-feather of a saker.

The length of a few living females, large birds, measured by the writer averaged twenty-two inches, while the wing averaged seventeen.

The weight of a mature female rarely exceeds 2 lbs. 8 oz. Young birds caught at the end of September weigh two or three ounces less, but put on weight during training. The heaviest weight recorded by me is that of an exceptional bird that, when in flying condition, weighed 2 lbs. 13¾ oz. Another large bird, after being set down to moult in February and fattened as much as possible, weighed 3 lbs. ¼ oz., a weight that it would, I fancy, never have attained in a wild state. Had the skin of this bird found its way into a museum, it would probably have been labelled *milvipes* or *hendersoni*.

The next heaviest weight recorded by the writer is that of a 'haggard' or wild-moulted bird, which, caught at Lakki near Bannu, reached Kohat on a 6th February and then weighed 2 lbs. 9½ oz. On March 28th, killing houbara well, she weighed 2 lbs. 6½ oz.,[1] too heavy a weight for spring. When calling her to the lure in the morning, a clamourous flock of crane passed overhead and

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white nails. I had once an 'intermewed' falcon that underwent, during the moult, some special treatment at the hands of the falconer, the result of which was that the nails turned white and two dropped off

[1] These weights, the result of long observation and practical experience, are given as a guide to beginners. An experienced falconer can tell the condition of a hawk that is daily on his fist, merely by feeling the breast and more specially the flesh under the wings. All birds go up and down very rapidly in weight. A female saker will go up two ounces in one night in the spring, if slightly overfed on houbara flesh the evening before. Hawks, to fly and work well continuously, must be kept as nearly as possible at one uniform weight.

awakened old memories in her breast: she did indeed settle on the lure that was hastily cast to her, but her gaze was fastened skywards, and, as her falconer cautiously approached her, that startled far-off look came into her eyes; she slowly spread her wings and disappeared.

Another exceptionally fine *chūz* or 'sore-hawk' [1] weighed when killing heron 2 lbs. 8 oz. What her wild and mature weight would have been I cannot say.

For houbara, a young passage-hawk in training should not be allowed to fall *below* 2 lbs. 4 oz. or she will lose too much pace, and will, in a stern chase, be lost. Most sakers fly at houbara all the better for being in *very* high condition.

For kite, on the other hand, 2 lbs. 3 oz. will be found a sufficient weight, as, if the hawk is flown fatter than this, she will probably not exert herself sufficiently at this difficult and distasteful quarry.

For hare, a saker *may* be in still lower condition, and it will be found that if reduced to even as low a weight as 2 lbs., she will still kill hares successfully.

'Intermewed' hawks are soft and must be kept in higher condition than passage-hawks.

An English falconer told me that he once had a young *chargh* brought to him for sale in Peshawar in 1892 or 1893, on the 28th July. With this exception the earliest date recorded by me is a 21st of September when a young *chargh*, said to have been caught a day or two before, was brought to me for sale in Peshawar.

Sakers leave India in February, about two months before the peregrines, and the migrating instinct seems to stir more powerfully in them. In the spring, when unhooded, they will sometimes gaze into the sky and cry plaintively. One sign of their becoming *mast* is bobbing before rousing. Does the saker nest earlier than the peregrine? Probably.

The latest date on which I have observed this falcon was the 28th of February 1906, when I caught a young bird on the Jarma Maira near Kohat. On the 26th February in the following year I observed a 'haggard' on the same spot; it could not have arrived more than a day or two before, and by the following morning it had left. On the 7th of March the same year I had a *bārak* [2] flown near Hoti Mardan without any success, nor could I hear of any *chargh* having been seen near the place for some days.

As already stated more than one race appears to visit the Punjab, entering by the passes on the North. The migrants are then caught by *bāraks* [2] as they cross certain open plains. A few are also caught by the nooses known as *phā'i* and *pā-dām*, the bait employed being either a field-rat,[3] or else a quail tethered by the neck. The best and finest birds are those caught not earlier than the beginning of November. Birds then caught appear to be also new arrivals, their lateness in arriving being perhaps due to the distance they have travelled. Natives are great believers in the excellence of hawks caught in certain districts.

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[1] 'Sore-hawk,' s., a hawk of the first year. From the Fr. *sor*, or *saur*, reddish brown; whence sorrel. * * *.—*Harting*.

[2] For a description and figure of a *bārak* 'vide' Jl. of Asiatic Society of Bengal, Vol. III., No. 1, January 1907.

[3] The rat's-teeth are broken, and, I think, the eyes are seeled.

An officer of the Guides told me that he once caught a *chargh* at Hoti Mardan with Russian bells on it, the name of a Russian firm being stamped on the bells.

The author of the *Bāz-Nāma-yi Naṣirī* states that one race, which he distinguishes by the epithet *māni'ī*, breeds in Nejd, " laying its eggs on the ground like the black-breasted sandgrouse [1] and the houbara bustard." (An Arab gentleman of *Basrah*, a falconer, also told me that in certain localities the saker nests on the ground). This race is said by the same author to prey chiefly on hare and houbara, and nestlings are considered equal to passage-hawks of certain other races. Another race or variety called by him *Ḥajjājī* is described as nesting in the hills of Nejd in the dry ravines hollowed out by the rush of water. Nestlings of another race are also, he says, obtained in spring from the hills of Persia and Asia Minor.

In Gould's " Birds of Asia " it is stated that the saker breeds in abundance in the low flat country of Bulgaria. The writer adds : " Pallas indicates two varieties of this species, a larger kind from the Uralian Mountains and a smaller from the deserts of Great Tartary. Both he says migrate in winter. The smaller appears to be the true saker ; he states that it constructs its nests upon the trees (or even the shrubs) which are found in the desert. The young, two or three in number, often leave the nest before they are full grown and follow their mother everywhere, uttering loud cries. Being easily caught, the natives take them at this period, as they are much esteemed for hunting, particularly by the Kalmucks."

Blanford says the saker usually nests on trees.

The late Sirdar Sher Ali, the exiled *Wālī* of Kandahar, informed the writer that in Afghanistan he flew *charkh* eyesses at gazelle, and preferred those taken from nests either on the ground or close to the ground, his theory being that the young, accustomed at an early age to see wolves and foxes, grew up more courageous.

Something yet remains to be learnt of what Gilbert White would call the " habits and conversation " of this falcon.

Sakers occasionally drink, but not as often as peregrines. After a hard day's work, especially if fed on rich houbara flesh, they should be offered water two or three times up till midnight. They will probably drink, and drinking helps digestion. Practically speaking they never bathe. Probably in a wild state it is their established custom to take dust baths. However, I have twice had 'intermewed' *charghs* that bathed ; in each case, not during the real hot weather, but after the moult when the weather was coolish. One bird bathed on the 17th and again on the 27th of August in Dera Ghazi Khan, and for a third time in December in the hill station of Parachinar when the water was freezingly cold. I have never known of any 'sore-hawk' or 'haggard' bathing during its first season, and no Indian falconer I have questioned has ever heard of a *chargh* bathing at all.

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[1] *Bāqir-qara* T. and *siyāh-sīna* P.

During the moult I have never known one eat "rangle" as *shāhīns* and peregrines do.

Sakers are very playful and will sometimes play with fallen leaves like kittens. They have, too, a curious habit of shrinking up their shoulders and crouching down when sparrows settle near their block. After feeding them up in the field and riding home with them unhooded they will adopt the same attitude on passing by a desert lark on the ground.

In a wild state sakers rob *lagaṛs* and kites, and of course, when opportunity offers, smaller hawks[1] as well. I think that the saker usually robs only kites high up in the air. A kite with food gets mobbed by its fellows, and rising to a height to enjoy a quiet meal[2] there falls a victim to its powerful robber. Sakers also feed largely on field rats of different species, and on lizards (*Uromastix*,[3] etc.). A Turkish gentlemen told me that in an eyrie at Kerman (in Persia) he found a large snake not quite dead. Sakers also prey on quail, *see-see* partridges, Indian crows, and probably on the short-eared owl, as well as on small birds. I have seen one kill a starling. Falconers of Tabriz in Persia have told me that occasionally these hawks create a havoc amongst the pigeons of fanciers, and that when falconers catch a saker there they levy blackmail from the pigeon-fanciers. Once, in camp, I was calling a young saker to the lure, when it spied a pair of wild blue-rocks feeding amongst the squadron-horses, and made an ineffectual stoop. One pigeon took refuge in a sowar's tent; the hawk sat on the top and waited. The sowar drove out the pigeon, which commenced to 'ring-up' perpendicularly, the hawk below it. The pigeon must have lost its head, for it was soon mastered and taken. Now no saker is fast enough to kill even a good house-pigeon in fair open flight. Some sakers at least, in a wild state, kill hares, while all, I think, prey on the houbara bustard (*Otis macqueenii*). Hares are perhaps chiefly hunted and preyed on by the pair when rearing young, but as for houbara—"*charghs* and houbara are enemies even from the egg" Sakers, especially when in the low condition they are usually kept by Indian falconers, very seldom check at the lure to chase crows and mainas; consequently it is commonly supposed that in a wild state they do not prey on small birds. Only two sakers have I ever seen that did check at the lure, both haggards: one chased kites and the other crows.

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[1] I once saw a merlin rob some small hawk. The merlin was robbed by a *lagaṛ*, which in turn was robbed by a *chargh*. Finally an eagle gave chase.

[2] Kites feed largely on the wing.

[3] The *sâna* or *sândhâ* of the Panjab. The flesh is white and rich looking and very like fat-turkey. This lizard is eaten by pariah tribes as well as by pariah dogs.

The flesh of water-birds is generally obnoxious to *charghs*. I have, however, frequently given a *light* meal of night-heron and purple-heron without evil results, but on two occasions I lost valuable birds by giving a full feed of the flesh of the common heron: the hawks cast their gorge and their stomachs were so upset that they were unable to retain meat of any kind. After killing a heron, a new *chargh* should be allowed to eat only a few beakfuls and should then be fed up on pigeon or dove. I have, too, seen a *chargh* cast her gorge after being fed on wild-duck.

Though sakers will eat the flesh of purple-herons, night-herons, and even common herons, with avidity, they seem to really dislike the flesh of paddy-birds. If fed on the flesh of a paddy-bird they will probably altogether decline to fly at that quarry again.

Like all hawks, they have a natural antipathy to owls, and some 'haggards' at least, extend this antipathy to harriers. I have more than once lost a newly-trained 'haggard,' which followed up a harrier for two or three miles, stooping at it with the utmost persistence, till we, gradually outdistanced, were unable to gallop further, and both birds disappeared from view.

I have seen an 'intermewed saker' strike a full grown hare on the head with such force that it never moved again. I have also seen a young bird, weighing 2 lbs. 4oz., lift a hare weighing 4½ lbs. and fly with it close to the ground for a distance of two or three hundred yards. On other occasions I have seen hares canter away for fifty or sixty yards, bearing off a saker that had 'bound' to their hind quarters.

Like most birds of prey these hawks, too, feed largely on locusts,[1] and it is almost impossible to catch one when locusts are about. During the in-migration of 1891 an unusally large number of young sakers was caught in the Peshawar, Pindi, Jallandhar, Dera Ismail Khan, and Bannun Districts, and doubtless elsewhere. So many were caught that there was no market for them. Birds were brought from a distance of 50 miles to D. I. Khan cantonment and sold to me for a rupee each. I bought several and released them. During 1890-91 there was a plague of locusts throughout the Punjab, and swarms of locusts had been reported from Central Asia, Egypt and elsewhere. May not this excessive number of young birds have been due to the abundance of food provided for nestlings by these locusts?

Both young birds ('sore-hawks') and haggards are trained. The former are preferred, but I am not at all sure that 'haggards' are not really better. They are certainly more easily entered to heron. As sakers migrate out of the Punjab early, that is in February, there is then a great danger of 'haggards' getting lost if flown at mounting quarry such as kites and herons, or indeed if flown at any quarry during the early part of the day in this month. In the middle of March, when the spring restlessness has passed, the danger is less. In nature, and in style of flying, the 'haggard' *chargh* is more like the peregrine than is the *chūz* or young 'passage-hawk.' It is more intelligent, and more quickly trained to the lure and entered to wild quarry; but it requires a greater amount of 'carriage' to man it.

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[1] Gilbert White remarks that birds of prey feed on insects.

Eastern falconers prefer the saker to the peregrine. It is hardier, requires less careful feeding, is plucky, moults easily and quickly,[1] is not restless and will consequently sit unhooded and quiet on the fist, will still work if not in quite the right condition, and, too, unlike a peregrine, it can be quickly fattened up if too thin. In the Chhach-Hazara District of the Punjab, where there are numerous splashes of water holding duck and teal, the peregrine is naturally preferred. Sakers caught in Bushire, in the Persian Gulf, and taken for sale to Basora, fetch as much as seventy rupees; but in the north of the Punbjab the price varies from three to ten. Englishmen, however, prefer the peregrine, partly for its air of breeding, partly because of its style of flying, and partly because it can be flown at varying game. The same saker can be flown at houbara and owls and perhaps at hare as well, but if one is trained to kite, heron, crane, or gazelle it should be kept for this one flight only. Lieut.-Colonel E. Delmé Radcliffe, speaking of the "Desert Falcons," in his pamphlet on Falconry, says: "They are dirty birds and have a strong smell and are quite unfit for pets. The better you treat them the worse they fly; and as a rule they must be kept to their work by continual physicking and washed meat, the latter being better for them if rather stinking. They are shy and crafty by nature and it is utterly impossible to break them of the habit of carrying."

These remarks sufficiently prove that the author never bothered himself with sakers. Sakers have no special smell and make, moreover, gentle and interesting pets. During the early days of training before they are 'manned,' that is, before they are sufficiently tame to preen themselves thoroughly when unhooded, they are sure to be troubled by large bird-lice,[2] especially so if the feathers have been wetted. These vermin are, however, easily destroyed in one night, by the common Indian remedy of a little mercury mixed with saliva, or even by some insect powders; and if the hawks be kept clean and in high condition, and apart from other infected birds, the lice will not return. Native falconers generally keep their hawks in low condition and stroke them with dirty greasy fingers that have just snuffed a mustard-oil lamp. Such birds are always troubled with lice. Natives do indeed physic continually, but this is generally unnecessary, and is certainly overdone. For high flights such as at kite and heron, two or three purges during the season are perhaps necessary, but as for stinking meat it is almost certain death. Meat, even the least bit tainted, will not only make a saker cast her 'gorge' but will so upset her digestion that she will cast any meat that is given her for some hours afterwards. If starved and very lightly fed, it is possible her life may be saved, but she will be so reduced in flesh that she cannot be flown even at the lure. A careless falconer of mine once gave tainted meat to a newly caught young 'passage-hawk' and left her. An hour later she was dead, choked by the meat that she has unable to eject through the hood. The taint of brass, too, will make sakers as well as other hawks cast their gorge. Shy and crafty, sakers certainly are—or is it that they are merely intelligent? *Be-wafā*, "faithless," is an epithet applied to them by natives, but I have had many birds that no more merited this reproach than peregrines. As for the vice of 'carrying,' sakers are fit only for large quarry, and are, by Easterns, never flown at anything else. I have flown sakers at grass- and short-eared owls, and stone-plover,—quarry that no Indian falconer will willingly attempt, but have never noticed this habit of 'carrying.' The saker has been hastily and unjustly judged, if not maligned, by English falconers generally.[1]

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[1] *Charghs* are often clean moulted by September, peregrines rarely so before Xmas.

[2] In a wild state lice are caught from kites. I do not, however, recollect snaring any 'haggard' saker that had lice in it.

These falcons seem to possess high reasoning powers as well as excellent memories I once tried the experiment of moulting some hawks, a *shāhīn* and a saker, "at the block," under a spreading tree, the hawks being left out day and night. (Neither dogs nor jackals molested them[2]). I one day shot a dove in the tree and gave it to the saker. Next day I shot a bird on the far side of the bungalow out of sight of the hawks, but on coming round the corner I saw the saker at the full extent of her leash, agitating her wings,[3] her neck stretched out in eager anticipation. In one lesson she had learnt to associate a gun-shot with food.

Some old *charghs* are too cunning to be caught either by means of a *bārak* or by nooses (*pā-dām*). Should such a one have taken up its quarters[4] in a particular spot, the hawk-catcher circumvents it in the following manner. He strolls past the resting-place of the *chargh*, dropping secretly a field-rat with 'seeled' eyes. The rat, unable to see, runs hither and thither in search of a hole, attracting the falcon's attention by its impotent movements. It is of course easily taken. When two or three rats are taken in this manner and the falcon lulled into security, the *pā-dām* are set up with a live field-rat as a bait. Some *charghs*, however, are said to be so cunning that on taking the first rat, they recognise that its eyes are seeled and hastily drop it, and cannot be deceived a second time.

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[1] The *shāhīn*, on the other hand, owing to its being confused with the peregrine, has obtained a reputation it by no means deserves.

[2] Cats will kill hooded hawks, and perhaps a hawk hanging from a perch. I only once had a peregrine on a perch injured by a half-mad pariah dog all mange and teeth.

[3] In ancient falconry this action in young nestlings was called "cowering."

[4] *Ādel* Hindus., adj.; applied to any migratory bird that, having reached its destination, has taken up its abode in a particular spot for the season.

In the Punjab the saker is flown at hare, houbara and kite. It used also to be trained to the common crane, and in Persia it was, according to the *Bāz-Nāma-yi Nāsirī*, flown at this quarry till recently. I have flown it successfully at short-eared owls and have also taken with it a few Indian grass-owls, a much more difficult quarry. I believe that any first-class saker in very high condition, *i.e.*, weighing 2 lbs. 5 oz. or more, can be flown successfully at this quarry, but I have not cared to risk a first-class bird at this flight during the spring on the return-migration. The saker will also, it is said, take black ibis (*Geronticus papillosus*) well. I have flown it with success at night-heron, purple-, and common heron. In Baghdad it is said to be flown at geese. Corballis in "Fifty-five Years of Sport," writing apparently of Syria, says: "This falcon is good at smaller game, such as grouse, partridges, etc." The saker, however, is essentially a falcon for large quarry: it is far too slow for sand-grouse in ordinary circumstances.

H.H. the late Mir Ali Murad used to train passage-sakers to 'ravine deer,' as is still done in some parts of Arabia and Persia. The late Sir Harry Lumsden, who raised the Guides, told the writer that the Amir of Kabul used to send him in the cold weather two Turkistani falconers with 'eyess' sakers[1] and Afghan greyhounds, all trained for this flight. He also had a passage-saker trained by these falconers. The greyhounds were first taught to wait on the hawk, by being slipped with a hawk at hares in a moderately close country where the hounds continually lost sight of the hare. The greyhounds were leashed in the following manner:—The mounted falconer wore a leather belt, to one side of which a long leather strap was sewn. At the far end of the strap was a slit to admit the fore part of the rider's foot. The end of the strap being passed through a ring in the greyhound's collar, the falconer inserted his toe in the slit, and then placed his foot in the stirrup. To slip the eager and straining greyhound, the rider had merely to withdraw his foot from the stirrup and the greyhound was off. With a greyhound, leashed in this manner, a falconer can ride at a smart canter.

At houbara, many haggards, in a stern chase, "fly cunning," that is, instead of putting on the speed, flying direct, and turning the quarry, they somewhat leisurely slant upwards to obtain an extensive view, well knowing that an houbara so commanded will soon settle. When the houbara takes refuge, the distant hawk, high in the air and sharply outlined against the sky, begins to slant towards the earth, but strain the eye as you may to mark the spot where she touches earth, the dark background of the far hills supervenes and you see no more. Lucky is the falconer that finds her half an hour later seated gorged amongst a heap of feathers and two or three bones. Can she have devoured a whole cock houbara, bones and entrails, or has a prowling jackal assisted at the feast? Anyway she will not be empty for two days and will require a good purge to bring her back to flying condition. Being only freshly gorged a feeling of satiety may not have set in, and so she may, perhaps, be caught in a *do-gaza* with a live fowl; but whatever device be used she will be tricked by it only once. If frightened off the quarry at evening, when only partially gorged, she may take stand in a tree and roost there all night in the hope of returning to her half-finished meal in the morning. If so, you must be ready on the spot before the false dawn. In any case, delay is fatal; for should a wheeling kite catch her view the spirit of the jungle will once more enter into her and she will disappear.

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[1] It has mistakenly been stated in the Badminton Magazine that Sir Harry Lumsden used peregrines for this flight.

Charghs require to be entered to one, or to each particular quarry—houbara excepted. A peregrine entered by trains to heron will fly at common and demoiselle cranes and *vice versa*, but a *chargh* will not do so.

Some *charghs* do not seem to understand that any bird except the houbara is fit for food. One of the best houbara-hawks I ever owned would not 'bind' to or plume a dead heron, nor could it be induced to even notice the existence of a turkey, not even when placed on the turkey's back. Unhooded at a stone-plover, it left the fist to start in pursuit, but at once returned on recognising the quarry; still half an hour later it killed three houbara. The same hawk was afterwards entered to and flown at hare, but when offered a small white rabbit she declined to look at it. However, such fastidiousness is not universal. One 'haggard' I had, was duly entered to houbara, given a winged night-heron, and then straightway flown at a wild night-heron, which it killed. She was next given, one morning, a large white egret, dead, and then flown in the evening at a wild one: she stooped at it three or four times and brought it to the ground, and had she not been harassed by a busy pair of wild *lagars* would probably have killed.

Some 'haggards' there are that will not kill fowls, but will still kill wild houbara in first-class style.

Choose a *chargh* with large nostrils and large eyes. Long birds are good stoopers: some of the best kite-hawks I have seen have been long. Indians consider that narrow flight-feathers are an indication of speed. A concave outline of the back, when the bird is viewed in profile, certainly indicates speed. Good birds should sit very upright on their perches and not be humpbacked; and the brighter and closer the plumage the better.

As a rule sakers require a great deal of 'carriage,' and, when new, 'carriage' of a special kind. A saker, especially a 'haggard,' may sit unhooded and quiet all day in the bazar and yet return home in the evening wilder than she was in the morning. She may not 'bait,' for she knows she is a prisoner. The falconer must, as it were, keep a new saker awake. He must constantly, as he strolls along, unhood and rehood her, and should always rehood her the moment she shows by her expression or attitude that she intends to 'bait.' He must not only handle and stroke her continually, but must be ever turning his hand and slightly altering its position, so as to force her to shift her feet. One hour of such carriage, is for a new hawk, worth the carriage of a whole day when she is allowed merely to sit quiet and unhooded on the fist in the bazar. I have had a 'haggard' come a distance of fifty yards to the lure in the morning, and then in the afternoon, after being carried bare-faced all day in the bazar by an inexperienced falconer, refuse to even look at the lure when thrown out quite close to her. I have sent this bird back to the bazar for one hour in charge of a falconer accustomed to *charghs*, and she has then come to the lure as well as before. Bert, in his *Treatise of Hawkes and Hawking*, says: "I have observed that it is much walking with my Hawke that hath wrought such good effect in her; for in my walking and turning, her eye doth still behold change of object, and the stirring of her feete doth worke as much or more good in her, for that maketh her desirous to sit still, and desirous of ease, which bating doth not giue, and in the first making saueth her many a bate." All this a saker requires and more, for she must be thoroughly reclaimed,[1] at the outset. She may appear tame in her own house and garden, and come well to the lure on her own parade-ground, and yet retain a certain amount of wild fear in her heart.

If she baits much, she must be quieted by what some old falconer—Bert, I think—calls "spouting," that is, the falconer must fill his mouth with water and spout it out in a forcible spray, well wetting the hawk first under each wing,[2] then on the stomach between the legs, and finally, removing the hood, on the head and breast. Squeezing water out of a sponge over the back is useless; and in any case the back feathers should not be wetted. When wetted as described, the hawk will sit quiet on the fist, draggle-tailed and miserable. She may have to be so wetted again and again.

Occasionally a saker is found so "hawtyn and prowde" that her spirit is not subdued by even these severe measures. You must then harden your heart, put on your great-coat, wet the hawk and sit out with her in the cold night. However sulky and troublesome a *chargh* may be, it can be manned,[3] trained, and entered to wild houbara within twenty-one days. For other quarry a longer time is necessary. *Charghs* may be entered to houbara, and even to hare, at any time; but they should be entered to kite or heron as soon as possible and while the "first hunger" is still on them—at least if they are 'sore-hawks' they must be so entered.

English falconers, who naturally measure all falcons by the standard of the peregrine, would call the *chargh* sulky and stubborn, but whatever defects of temper this species may have, they are cured by proper treatment in the early stages of training. Many *charghs* there are, as docile as the 'falcon gentle.'

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[1] 'To reclaim' is to make tame and familiar.

[2] By lowering and raising the hand the hooded hawk can be made to expand her wings.

[3] 'To man' is to accustom to man's presence.

The saker is said to have a great outward resemblance to the Iceland Falcon,[1] prized by ancient falconers, but condemned as sulky and delicate by modern ones. The resemblance appears to extend to the temper as well. Possibly Jer-falcons require the special carriage and handling so necessary for most *charghs*.

Unlike the peregrine, the *chargh*, by being given many 'trains,' does not easily become what Punjabi falconers call *bā'ūlī-band* or *bā'ulī-khur*, *i.e.*, it does not easily contract the vice of flying only at bagged quarry. It is not nearly as fast as a peregrine, but makes up by wind and perseverance for what it lacks in pace, and it usually flies its fastest. At ringing-up it is not to be surpassed. Its stoop, when driven home, is deadly, but is not so sudden and unexpected as a peregrine's. After a miss, it is better at recovering and shooting up with the impetus of its fall. It will stoop at a kite many times and miss, whereas a peregrine will often 'bind' to a kite at the first or second stoop.

Flown at kite in cantonments a good saker will single out one bird, probably a young bird, and stick to it, stooping and missing repeatedly, but not changing to another nearer to or below her, and this no matter if the air be black with kites.

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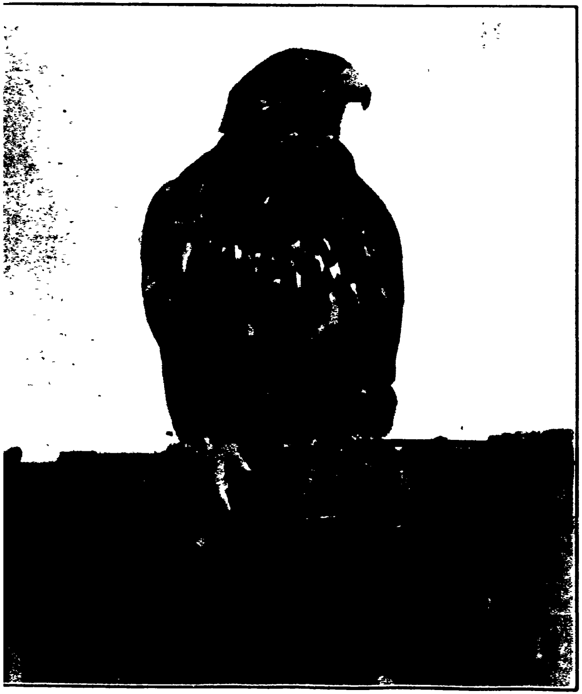
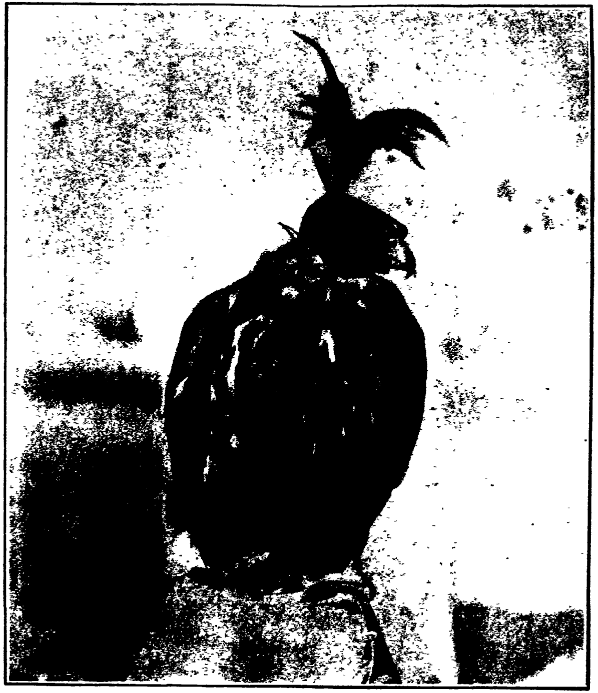
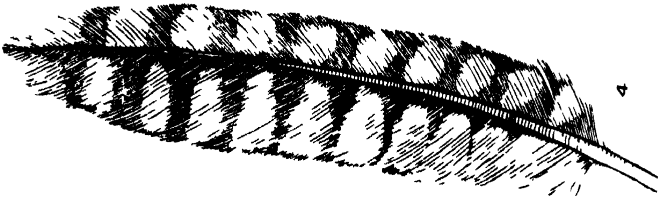
[1] In *Falconry in the British Isles* the weight of a female Iceland Falcon is stated to be 3¼ lbs. and its length about 23 inches. The length of a male is said to be 20 inches.







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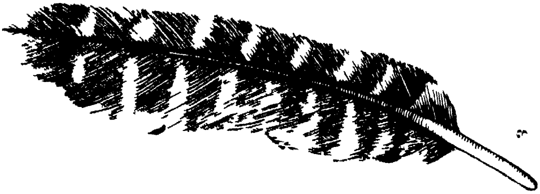

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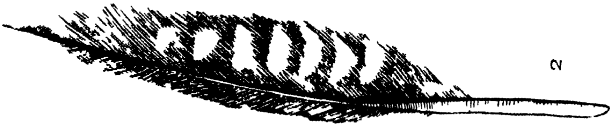

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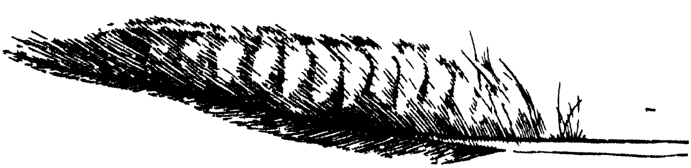

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30. Notes from the Chemical Laboratory of the Presidency College.

Note No. 4.—The Electrical State of Nascent Gases. A Preliminary Note.

By J. A. Cunningham, *Professor of Chemistry*, and Satish Chandra Mukerji, *Government Research Scholar*, *Presidency College, Calcutta.*

One of the most attractive problems of modern Chemistr is involved in the effort to explain chemical combination in th light of the recent developments of our knowledge of Electricit and its atomic structure. Speculations have been very rife, an direct experiments very rare. We have hoped to be able to obtain some information on the subject by a direct investigation of the electrical condition of gases just after their liberation from chemical compounds.

A number of early observers have experimented on the electrical phenomena associated with chemical combination and decomposition, but the true interpretation of their observations is involved in some uncertainty. In the light of J. J. Thomson's exposition of the nature of electricity, Townsend [1] determined the resultant electrification of hydrogen and oxygen liberated by the electrolysis of dilute sulphuric acid and potassium hydrate solutions, and of hydrogen and chlorine from the electrolysis of hydrochloric acid. From sulphuric acid both gases carried away a positive charge ; from potassium hydrate a negative charge ; and from hydrochloric acid the hydrogen carried a variable positive and the chlorine a small negative charge. Townsend's method of measurement was to connect a flask into which the charged gas was made to carry a cloud, with one pair of quadrants of an electrometer. He therefore only measured the excess of one kind of electricity over the other. His object was primarily to study the formation of clouds, and the properties of electrified gases as such. The understanding of the bearing of his results on the nature of chemical combination is complicated by the uncertainty as to the exact nature of the chemical reactions involved in the genesis of the gases in solutions, and, still further, by doubts as to the electrical effects superimposed by the processes of bubbling them through these, and certain other purifying liquids.

The experiments described in the present paper have been designed to be directly applicable to the simplest possible chemical reactions, and to the measurement of the total number of both figures given in the fourth column of the foregoing Table which are roughly proportional to the measured deflections.

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[1] Proc. Cambr. Phil. Soc. ix. 1897, 244, & 1898, 345, & Phil. Mag. v. 1898, p. 45.

The least ionised sample of oxygen was that split off from its double-bonded union with mercury—

$$2Hg{=}O = 2Hg + O_2$$

The ionisation of the oxygen expelled from the middle of the peroxide molecule

$$2Na-O-O-Na = 2Na\text{-}O\text{-}Na + O_2$$

is only slightly greater.

The fact that the decomposition of $KMnO_4$ yields less than half as many ions as that of $KClO_4$, with which it is isomorphous, is perhaps connected with the fact that the chlorine atom with which the oxygen is united in the latter case is left in the solid residue at the end of the experiment in a completely electronegative capacity of direct combination with potassium

$$KClO_4 = KCl + 2O_2$$

whereas the manganese atom, though occupying the corresponding position in the original molecule, is left behind in an electropositive capacity of holding on to a large part of its oxygen—

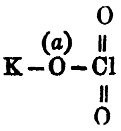
$$2KMnO_4 = K_2MnO_4 + MnO_2 + O_2$$

or whatever other equation be taken to represent the reaction.

If we compare the numbers obtained for the ionisation of the oxygen from potassium chlorate with those obtained from potassium perchlorate, we notice that the number of positive ions are simply proportional to the number of molecules of the substances taken in order to produce equal volumes of oxygen :—

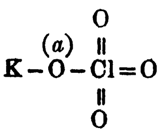
$$4KClO_3 = 4KCl + 6O_2 \ (+4n \text{ ions})$$
$$3KClO_4 = 3KCl + 6O_2 \ (+3n \ \text{,,} \ )$$

This can readily be explained on the hypothesis that the ions are all produced from the breaking out of the oxygen atom (*a*)—



$$\mathrm{K-\overset{(a)}{O}-\underset{\underset{\displaystyle O}{\|}}{\overset{\overset{\displaystyle O}{\|}}{Cl}}}$$

and



$$\mathrm{K-\overset{(a)}{O}-\underset{\underset{\displaystyle O}{\|}}{\overset{\overset{\displaystyle O}{\|}}{Cl}}{=}O}$$

which in each molecule acts as a connecting link between the potassium atom and the chlorine atom ; whereas those oxygen atoms which are doubly connected with the chlorine atom are expelled without any electric displacement. This result is arrived at quite regardless of which of the many suggested formulæ we adopt as that best representing the decomposition of the chlorate. Moissan[1] mentions in particular four such equations as having been advocated and supported by various experimenters, *viz.* :—

(1) $2KClO_3 = KCl + KClO_4 + O_2$

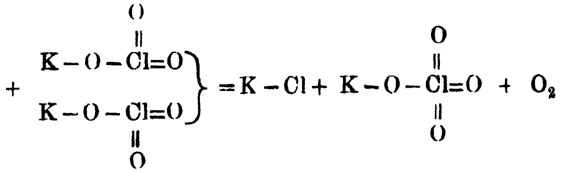
(2) $8KClO_3 = 3KCl + 5KClO_4 + 2O_2$

(3) $10KClO_3 = 4KCl + 6KClO_4 + 3O_2$ and

(4) $22KClO_3 = 8KCl + 14KClO_4 + 5O_2$

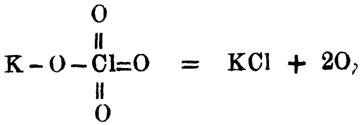
But in every case the total reaction is made up of the same two elements, *viz.* :—

(i)



$$\left.\begin{array}{l} K-O-\overset{\displaystyle O}{\overset{\|}{Cl}}=O \\ + \\ K-O-\underset{\displaystyle O}{\underset{\|}{Cl}}=O \end{array}\right\} = K-Cl + K-O-\overset{\displaystyle O}{\overset{\|}{\underset{\displaystyle O}{\underset{\|}{Cl}}}}=O + O_2$$

and (ii)



$$K-O-\overset{\displaystyle O}{\overset{\|}{\underset{\displaystyle O}{\underset{\|}{Cl}}}}=O = KCl + 2O_2$$

and ultimately each molecule of the substance has to yield up one atom of oxygen from the position intermediate between K– and –Cl.

As regards the different formula which have been put forward, it is to be noticed that they may perhaps be traced to the different physical conditions under which different observers have performed their experiments. Thus Frankland and Dingwall[2] found that when the experimental vessel was heated with a naked flame, the reaction corresponded most nearly with equation (2) above, while heating in a sulphur vapour bath produced results more nearly corresponding to formula (3), and on the other hand heating the substance after mixture with finely powdered glass gave results represented by (1). These variations are perhaps connected with a discrepancy noticed during the course of the present work between the results obtained when the generating vessel was heated over a naked flame and in an air-bath. It is just possible that the discrepancies are due to the salt undergoing decomposition being, in the one case, practically earthed and in the other effectively insulated. Further investigations on this point are at present in progress.

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[1] Traité de Chimie Minérale, iii, 89.

[2] Journ. Chem. Soc. li. (1887), Trans. 274.

31. Some Notes on the Vedic Sacrifices.

By Bhaves Chandra Banerji, M.A. (Research Scholar),
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General Remarks.

Sacrifice seems to have been the chief, nay the only religious rite practised by the Vedic Aryans, and they performed it most diligently, not only with a spiritual object, namely the attainment of a happy hereafter, in some distant region of eternal bliss, the abode of the gods, but also with secular motives, *viz.*, to have an abundance of food and cattle, a perpetual posterity and a complete victory over their rivals and enemies. Indeed, these three worldy objects were the incentives to all their sacrifices.

Fire was the principal elemental deity—Devatā—of the ancient Aryans, to whom they offered their sacrificial materials and through whom only the offerings were to be carried to the other Devatās, whom they propitiated for fulfilling their multifarious desires.

The idea of the ritualists was that every minor function in a sacrifice (*e.g.*, the beating of the corn, in order to separate it from the chaff, the grinding of the grain, etc.) produces an unseen spiritual effect known by the technical term Apūrva; and there is *a gradation in the intensity or quantity of the Apūrva in proportion to the extent or duration of the action.* Thus the entire action produces the highest and ultimate Apūrva, which is the sum total of all the minor Apūrvas. When the sacrifice is completed the Apūrva remains and secures the desired object (*e.g.* Heaven) for the sacrificer after his death. This is the way in which the spiritual results of the sacrifices are attained.

Classification.

I shall try to give an idea of the various classes into which sacrifices have been divided by the Vedic sages.

(1) They have been classified according to their materials of oblation under three heads, namely—(*a*) Haviryajña or sacrifice with corn, (*b*) Pākayajña or sacrifice with cooked materials, (*c*) Somayajña or sacrifice with Soma plants.

(*a*) The sacrifices performed with corn as the principal material are called Haviryajña. The Darçapūrnamāsa or the new and full moon sacrifices are the typical forms of such sacrifices. There are five other such Haviryajñas.

(*b*) Those in which cooked materials are offered are called Pākayajñas, *viz.*, the Parvana, etc. These are seven in number.

(c) Those in which the Soma juice is the principal material are called Somayajñas, *e.g.*, the Jyotiṣṭoma. This Soma sacrifice is the most important of all; its preliminary functions were the killing of some animal, usually a he-goat, and the offering of the flesh and the omentum of that victim with the Soma juice to the deities. The final functions were the drinking of the residue of the Soma juice, thus offered, in wooden cups, which had an intoxicating effect. The goat was killed in a peculiar manner: the slaughterer (Çamitā) held its mouth tightly closed, and it is said that violent blows with the fists were delivered till the poor animal was dead. The priests at this time retired from that place. The Çatapatha Brāhmaṇa remarks: "The animal is not killed in the human manner, by being seized by the horn, nor after the manner of the Fathers, who seized it behind the ears, but it is choked by keeping its mouth closed, or by means of a noose" (Çat. Br. 3, 8, 1, 15). The omentum (Vapā), flesh-portions, and the gravy (Vasā) of that strangled animal were then cut off by means of an axe-shaped instrument (Svadhiti) and offered as oblations.

(2) The Soma sacrifices are again divided into three classes according to the duration required for their performance. These are called (*a*) Ekāhas or those performed in one day, *e.g.*, the Agniṣhṭoma; (*b*) Ahīnas, or those that take from two to twelve days for their performance, *e.g.*, the Aharganas, like the Dvādaçāha, and (*c*) Sattras or sacrificial sessions lasting from twelve days upwards, *e.g.*, the Gavâmayana. There are seven forms of Ekâha sacrifices, *viz*, the Agniṣṭoma, the Atyāgniṣṭoma, the Ukthya, the Soḍaçin, the Vājapeya, the Atirātra, and the Āptoryāma. Besides these, there are some complex sacrifices which consist of several independent sacrifices, for example, the Rājasūya is a complex ceremony consisting of a long series of sacrificial performances extended over a period of two years. The legendary history of India describes *Sattras*, which are said to have lasted for one hundred years, and it is interesting to note that the Mahābhārata mentions of a Sattra, *Iṣṭākṛta* by name, which lasted for even one thousand years. There is, however, an Adhikararna in the Mīmāṃsā Suttras which says that a Saṃvatsara (*lit.* a year) means "a day" in connection with the Sahasrasaṃvatsara sattra (*i.e.* sacrifice lasting a thousand years).

(3) The sacrifices are often regarded from another point of view, namely their connection with one or more of the Vedas; thus the Agnihotra is the principal sacrifice of the Yajurveda, the Darçapūrnamāsa of the Ṛik and the Yajurvedas and the Agniṣṭoma of all the three Vedas, the Ṛik, the Yajur and the Sāman. It should be noted here that the three sacrifices mentioned above are the three Prakritis, or fundamental forms of sacrifices, out of which the various Vikritis or modifications have developed.

THE POSSIBLE PRIORITY OF THE SOMA SACRIFICES TO THE CORN ONES.

It is difficult to ascertain when and how these multifarious sacrifices originated, or commenced to be performed by the ancient Vedic Aryans. It is therefore impossible to assign any date to any of these. But it seems quite probable that the Soma and the animal sacrifices, *e.g.*, the Agniṣṭoma, the Sattras, etc., were practised by the Aryans at a very early period, and the corn sacrifices, *e.g.*, the Darçapūrnamāsa, etc., were of later origin. For, earlier Aryans devoted the best of their times in the invention of newer and more nice and complicated observances of the Soma sacrifices. It is for this reason only that we find innumerable kinds of these forms of sacrifice, while the corn sacrifices are so limited in number. This they did when they lived in the mountainous tracts of the Upper Punjab, for the Soma was a native of the mountains of these regions. The Atharva and the Rigvedas describe the Mūjavat Peak, which is indirectly referred to as the home of the Soma, and modern *Sâvâns* have identified the Mūjavat with one of the mountains to the south-west of Kashmir. That the Soma was a creeper found in hilly places is known from the Çatapatha Brāhmaṇa as well. Here we must remember that the Soma sacrifice was closely connected with the animal sacrifices. No Soma sacrifice was complete without an animal sacrifice being associated with it. Similarly the animal sacrifices, *e.g.*, the Açvamedha, included a Soma offering. Thus the one meant the other.

Now what I propose to establish is that these animal and Soma sacrifices were the only rituals or ceremonies of the earliest Aryans. In the earliest times when civilization was practically unknown to the Aryans, they used to sacrifice the highest animal—their fellow-creature, man—in their offerings, then with the advancement of civilization, and the gradual development of the ideas of morality, they gave up that abominable practice and took lower animals, *e.g.*, the horse, the cow, the sheep, and, last of all, the goat. The Çatapatha Brahmaṇa directly states in one place that Çyāparṇa Sāyakāyana was the last person who killed these higher animals in the sacrificial rites, after him the goat only was used in them (*vide* Çatapatha Br., 6-2-1). There is also an Adhikaraṇa in the Mīmāṃsā relating to this.

When the Vedic Aryans became still more advanced in civilization, they completely did away with the cruel practice of killing animals in their religious ceremonies and offering them to the deities. Henceforth their sacrifices were, for the most part, limited to oblations of corn such as rice, barley, &c. By this, of course, I do not mean to say that the animal sacrifice was totally abolished in the later Vedic society, but all that I intend to assert is that now the majority of the people performed only the non-animal, *i.e.* the corn and the milk sacrifices. Thus we may conclude the Soma and the animal sacrifices were prior to the corn ones.

I shall give two proofs—one internal and the other external—in support of the above theory. The first, the internal one, is that there is a direct statement in the Çatapatha Brahmaṇa about this fact. In the translation of a passage in the Çatapatha Brahmaṇa by Mr. Eggeling, we find that in the beginning they offered up a *man* as the victim in their sacrificial rites. When he was offered up, the sacrificial essence went out of him and entered into the *horse*, it then went out of that animal and entered into the *cow*, and, in this way, it successively went out of the cow, the *sheep* and at last of the *goat*; from the goat the sacrificial essence entered into the earth and was found in the rice and barley, and as much efficacy *as all those sacrificial animals* (1) man, (2) horse, (3) cow, (4) sheep, (5) goat, have for the sacrificers so much efficacy has the oblation of rice and barley for them.

Here it is directly hinted that the corn sacrifices are of a later origin than the animal ones. The orthodox scholars may contend that it is merely an Arthavāda or eulogy on the corn sacrifices, but a eulogy may sometimes contain an element of truth.

The other evidence, that I wish to adduce in support of this theory, is that the hymns of the Ṛigveda, which are unanimously held to be the earliest of the Vedic writings, abound in the descriptions and praises of the Soma and seldom speak of *vrīhi* (rice) or *yava* (barley). This shows that the Soma fully engrossed the minds of the Aryans at that period, and that the corn sacrifices were little known to them. Had they been accustomed to the corn sacrifices, the Ṛigveda would have made similar mention of the corn as well.

WHO ARE ENTITLED TO THE SACRIFICIAL OBSERVANCES?

The Adhikaraṇas say that all the three higher castes, *viz*., the Brāhmaṇa, the Kṣatriya and the Vaiçya are entitled to the performance of sacrifices and the auxiliary rites and ceremonies. This is the general rule. But some of the sacrifices are peculiar and restricted to some one or other of these three castes. For example, the Bṛihaspatisava is to be observed by a Brāhmaṇa alone. The sacrifices Rājasuya, Açvamedha, Puruṣamedha, &c., are open to the Kṣatriyas only. The Sattras or sacrificial sessions—those that take more than twelve days to be performed—*e.g.*, Gavāmayana, &c., are restricted to the Brahmaṇas only. The other castes have no right to perform a Sattra. But, of course, in all these sacrifices, the Brāhmaṇas alone should act as priests.

A woman has no right to any sacrifice independently, but she has to perform it conjointly with her husband. The duties, *Ajyāvekṣaṇa* or the inspection of the *ghee*, &c., in the Darsapūrnamāsa should be performed by the wife of the sacrificer. The entire Sudra caste and those of the higher classes who are decrepit, deaf, dumb, blind, &c., *i.e.*, who are deficient in any of the senses or organs, have no right to any sacrifice. Those deformed or maimed in any of their limbs have no right to perform a sacrifice, but if their defect or deformity be of such a nature as may possibly be mended or remedied, they are admitted to the Vedic rites. The mixed castes, *e.g.*, the *Rathacāras* or the *Nishadasthhapatis* have a right to perform only a few of the Vedic rites, and that under the direction of experts present then and there.

An Account of the Priests in the Vedic Ceremonials.

It has been observed before, that in all the sacrifices the Brāhmaṇas alone should officiate as priests. But we should carefully distinguish the Brāhmaṇa Ṛtvik or the officiating priests (1st) from the sacrificer himself and (2nd) from the other agents that are neither sacrificers nor priests. To the latter class belonged the superintendent of the sacrificial compound, *viz.*, the Sadasya, the few Chamasādwaryus, the Çamitā or the Slaughterman, the seller of the Soma creeper and such other minor functionaries.

The maximum number of priests is sixteen; but all of them are not required in most of the sacrifices. They are all found in a Sattra. Here we should note that in a Sattra the priests are the sacrificers as well, *i.e.*, all the sixteen priests together with the *Grihapati* or the householder have an oqual and full share in the fruit of a Sattra. It is for this reason that such duties as (Dakshiṇādāna) the bestowing of the priest's remuneration or (Ṛtvig-varaṇa) the ceremony for formally choosing the priests, are not seen in a Sattra. Because, these duties are only meant for persuading or creating an interest for the priest who have, of course, no share in the fruit of the other kind of sacrifices. In a corn sacrifice like the Darçapūrnamāsa there are only four priests, *viz*:—the Adhyaryu, the Hotā, the Agnidhra and the Brahmā.

The sixteen priests have, of course, respective duties assigned to each. Here I give a table which will explain the ordinary duties of each of these sixteen priests, together with the share of the residue of the Soma juice, to which each of these are entitled at the completion of a sacrifice, and also to which of the four Vedas do they severally belong.

	(Initiators) The Adhyaryu class of the Yajurveda.	(Superintendent) The Brahmā class of the Atharvaveda.	The Udgātā class (Singers) of the Sāmaveda.	The Hotā class (Reciters) of the Rigveda.
The full share-holders	**Adhyaryu...**	**Brahmā ...**	**Udgātā ...**	**Hotā.**
The half share-holders	**Pratiprasthūtā.**	**Brāhmanāchhansi.**	**Prastotā ..**	**Maitrāvarunna.**
The one-third share-holders.	**Neshtā ..**	**Agnīdhra...**	**Pratihartā**	**Achchhāvāka.**
The one-fouth share-holders.	**Unnetā ..**	**Potā .**	**Subramhanya.**	**Grāvastut**

Here it is interesting to note that in a Soma sacrifice the priests used to drink the residue of the juice left after the oblation

to the Holy Fire. The Brāhmaṇas alone were entitled to this drink, but if a Kshatriya wished to drink it, he was supplied with a drink made of the shoots of the Nyagrodha or the Indian fig-tree mixed with curds, the Soma being never allowed to a non-Brāhmaṇa.

32. Chronology of Indian Authors, a supplement to M. Duff's Chronology of India.

By NILMANI CHAKRAVARTI, M.A. (*Research Scholar*).

Mabel Duff's most useful work, entitled *The Choronology of India*, was published in 1899. Since then many volumes of the Reports and Catalogues of the operation of the search for Sanskirt MSS. have been published. The following chronology of Indian authors, supplementing that of M. Duff, is the outcome of a study of these Reports and Catalogues. I have put in some dates which escaped the notice of the distinguished authoress and brought them down to 1700 A.D.

169 S'aka (?) 91. The date of translation of the *Yavanajātaka*, from Greek, by Yavaneśvara. H.P.S. Rep., p 8.

269 S'aka (?) 191. Sphurjjidhvaja turned the *Yavanajātaka* into 4,000 Indravajrā ślokas. H.P.S. Rep., p. 8.

479 V. Saṃ. 535. Death of Haribhadrasuri, a great Jaina scholar, author of 1,400 works. Peterson Rep. III., p. 3.

57-569 The probable date of the Chinese translation of the *Sāṃkhyakārika* and commentary. B. N., 378.

600 Pṛthuyaśas, son of Varāhamihira, wrote his *Horāṣaṭpañcāśikā* about this time. I.O. Cat. No. 2992.

850 Rājānaka Rāma, the commentator of Kallaṭa, who speaks of himself as a younger brother of Muktākana, a poet in the court of Avantivarman, belonged to this period. I.O. Cat. No. 2525. Avantivarman was king of Kaśmir about 855 A.D. (See Duff's Chronology).

860 Viśākhādatta composed *Mudrārākṣas*, under the patronage of Avantīvarmā, king of Kaśmīr. Vienna Oriental Journal II., 216.

976 S'aka (?) 898. The date of Vācaspatimiśra's *Nyāyasūcīnibandha*. Notice of Sanskrit MSS., second series, Vol II., p. xix. See also *Nyāyavārtika*, edited by Pandit Vindhyeśvarī prasāda.

984 S'aka 906. The date of *Ātmatattvaviveka* or *Bauddhādhikkāra* of Udayana. See Yadunātha Sārvabhauma's edition of Ātmatattvaviveka.

1060 Cakrapāṇidatta, or more commonly Çakradatta, nephew of Nārāyaṇa, the kitchen-superintendent of Nayapāla, king of Bengal, author of *Cikitsāsaṃgraha* and other works. I.O. Cat. No. 2674.

1069 N.S. 189. The probable date of composition of the *Dharmapatrikā*, a treatise on Yoga. It was composed during the reign of Rājā S'aṅkara, by M. M. H. P. S'āstrī. Nepal Catalogue Intro., p. xlvii.

A.D. *1075* The *Śabdapradīpa* complied by Suresvara. It is a medical dictionary. The author's father was Bhadreśvara and his grandfather Yaśodhara. In the introduction the author says that he was a physician to King Bhīma, his father to King Rāmapāla who was then the King of Bengal, and his grandfather was a physician to King Govindacandra. I.O. Cat. No. 2739. See also Ep. Ind., Vol. II., pp. 350–51 and South Indian Inscriptions, Hultzsch, Vol. I., p. 99.

" 1092 Śaka 1014. The probable date of composition of the *Kālaviveka*, by Jīmūtavāhana, the author of Dāyabhāga. Pref. Kālaviveka, Bib. Ind., edited by Paṇḍit Pramathanāthā Tarkabhūṣana.

" *1100* The *Rāmapālacarita*, composed by Śandhyākara Nandī, the son of Prajāpati Nandi, the minister of peace and war to Rāmapāla, King of Bengal. H.P.S. Rep., p. 7.

" *1125* Lakṣmīdhara, son of Hṛdayadhara, minister of Govindacandra of Kanauj (1115–1143), wrote his *Kṛtyakalpataru*. I.O. Cat. No. 1385.

" 1158 K.Y. 4260. The date of the *Gaṇitacūḍāmaṇi* of Rājapaṇḍita Śrinivāsa (quoted by Rāyamukuṭa in his commentary on the *Amarakoṣa* (see I.O. Cat. No. 956). The author also wrote Śuddhidīpikā. I. O. Cat. No. 3007.

" *1160* Durlabharāja, son of Narasiṃha Mahattara, wrote *Sāmudrikatilaka*, under the patronage of Kumārapāla, King of Gujrat (1145–1173). B. M. C. 525.

" 1161 V. Saṃ. 1227. The *Guṇamālaṭīkā* composed by Rāma Vijaya, L. 4076.

" 1166 V. Saṃ. 1222. Candrasūri of the Harṣapurīyagaccha, author of the *Saṅghayaṇirayaṇa*, *Khetta samāsa* and a commentary on the *Avaśyakasūtra*. Peters. Rep. IV., p. xxvii.

" 1169 Śaka 1091. The *Dānasāgara*, complied by Ballālasena, King of Bengal. I.O. Cat. 1704–1705.

" 1173 Śaka 1095 *Durghaṭavṛtti*, a manual of grammar composed by Śaraṇa deva. The work was revised in the lifetime of the author and, with his consent, by Sarvarakṣita. It now exists in the revised form. Nepal Catalogue. H. P. S. Intro., p. v.

" *1175* The probable dates of the poets Dhoyī, Govardhana, Umāpatidhara and Jayadeva, contemporaries of Lakṣmaṇasena of Bengal. Notices (second series) p. xxxviii.

" 1197 Śaka 1119. Death of Anandatitha or Madhva, the first pontiff and founder of the Madhva sect. Bhandarkar Rep., 1882–83, p. 17. But, according to the *Smṛtyarthasāgara* of Nṛsiṃha Acārya, Madhva was born (*avatirṇa*) in Śaka 1120, see Aufrecht Cat. Cod., p. 285 B. For the age of Madhva and his pupils see Ep. Ind., Vol. VI., No. 25.

" 1224 V. Saṃ. 1280. The *Cikitsāmṛtaṃ*, composed by Milhaṇa, at Delhi, while Sāmasuddin Altamash was reigning. Rep., p. 9.

" 1232 Samvat 1288. The probable date of composition of the *Lekhapañcāśikā*. Bhr. Report, 1882–83, p. 38.

" 1240 V. Saṃ. 1296. The *Āścaryayogamālā* laghu Vṛtti, composed by Śvetāmbara Guṇākara. Bik. Cat. No. 1377; Peters. 4, xxvi.

A.D. *1250* . *Dūtāṅgadaṃ* composed by Subhaṭa, under the orders of Tribhuvanapāla (cālukya of Aṇhilvāḍ), on the occasion of the *yātrā* of Kumārapāla. Oxf. Cat. No. 276; Bik. Cat. No. 534.

, *1260* Bharatasvāmin, who lived in the time of Rāmanātha, the son of the Hoysala king Someśvara of Dvārasamudra, wrote a *Bhāṣya* on the Sāmaveda. Hultzsch Rep. 2, iv.

„ 1263 S'aka 1185. Mahādeva, son of Luniga, wrote a commentary on the *Jyotiṣaratnamālā* of S'rīpati. Ulwar Cat. Ext. 498; Nepal Cat. Int., p. xxviii.

„ 1266 S'aka 1188. Reṇukārya wrote a commentary on the *Kātīya-gṛhya sūtra*. I.O. Cat. No. 361.

„ 1273 V. Samvat 1329. Somacandra composed a commentary on the *Vṛttaratnākara*. Ulwar Cat. Ext. 245.

„ 1291 V. Saṃ. 1347. A commentary on the *Viṣṇubhtaki kalpalatā* was composed by Maheśvara, the son of Virūpākṣa. Bhr. 1883-84, p. 54.

„ 1307 V. Saṃ. 1363. Jinaprabhasūri, a pupil of Jinasiṃha sūri, wrote the *Vīhimggappavā*. W. No. 1944.

„ 1324 V. Saṃ. 1380. The *Sangītopaniṣat* compiled by Vācanācārya Sudhākalasa, pupil of Rāja S'ekhara of the Maladhārigaccha. The same author made an extract of his work in V. Saṃ. 1406=1350 A.D. Bik. Cat. No. 1127.

„ *1324* Jyotirīśvara composed *Dhūrtta Samāgama Nataka*. Rep., p. 23.

„ 1327 V. Saṃ. 1385. Vyāsa Mokṣāditya composed *Bhīmavikrama*, a drama on the conquest of Jarāsandha, King of Magadha, by Bhīma, the second Pāṇḍava. B.M.C. No. 273.

„ 1332 La. Saṃ. 216. Bhavadatta completed his commentary on the *Naiṣadhacarita* of S'rīharṣa. I.O. Cat. No. 3830. 3831.

„ 1349 V. Saṃ. 1405. Rāmacandra Somayājin, pupil of Vidyākara Vājapeyi, wrote *Nāḍī parīkṣā*. Rep., p. 10.

„ *1350* The *Sṛṅgaradipikā*, a commentary on the *Amaruśataka* by Komati Vema, who has been identified, by Dr. Hultzsch, with King Vema, the son of Prola of the Reḍḍi dynasty of Koṇḍavīḍu. Hultzsch. Rep., i., p. x.

Rāma rāja, an officer in the service of Sādhāraṇa, King of Kāṣṭhā, compiled the *Rasaratnapradipa* about this time. Ulwar Cat. Ext., 425.

, 1359 V. Saṃ. (?) 1415 The *Kṣema kutuhala* composed by Kṣemaśarmā. L. 4062.

, 1375 S'aka 1297. Padmanābha Bhaṭṭa wrote the *Supadma* grammar. Notices of Sanskrit MSS., new series, Vol I., p. vii.

, *1375* *Vīrasiṃha vilokana*, composed under Vīrasiṃha, and attributed to him. Vīrasiṃha was the son of Devavarmā, Tomara Prince of Gwalior. Bik Cat. No. 1063; Cat. Cat. p. 595 B.

1380 N. S. 500. Maṇika composed the *Bhairavānanda nāṭaka*, under the patronage of Jayasthitimalla, King of Nepal. Nepal Cat., p. x and xxxvii.

1400 The *Siśū-rakṣā-tantra*, a treatise on the treatment of children, composed by Pṛthvīmalla, brother of Māndhātā, son of Madanapāla, King of Kāṣṭhā. I.O. Cat. 2720.

Rāmadeva, alias Vyāsa S'rīrāma, composed *Subhadrā-parinaya* for King Haribrahma, son of Rāmadeva, King of Raipur who, according to Professor Bendal, was ruling in A.D. 1402 and 1415. The author's *Rāmābhyudaya* was enacted under the orders of Mahārāṇaka Merudeva, son of Rāmadeva, who, according to Professor Bendal, was an elder brother and predecessor of Haribrahma. B.M.C. No. 271.

A.D. *1405* Jinavardhana sūri, pupil of Jinarāja Sūri, high priest of the Kharataragaccha (V. Saṃ 1461–1475), wrote a commentary or the *Vāgbhaṭālaṅkāra*. I.O. 1156.

,, 1412 V. Saṃ. 1468. The *Momahana-Vilāsa*, composed, with a commentary, by Momahana, son of Prayāgadāsa and grandson of Hari Bāghela of Kālpi, during the reign of Mahmudshāh (Taglak) son of Firojshāh. L. 779.

——Caturbhuja Miśra Aupamanyava wrote a commentary on the *Mahābhārata* B.M.C. No. 70.

——The *Madan-ratna-pradīpa* compiled under the patronage of Madanasiṃha, son of Saktisiṃha. Nepal Cat., p. xviii.

,, *1415* Cauṇḍapācarya, minister of Bhūpati, son of Bukka II of Vijayanagara, wrote a commentary on the *Apastamba sūtra*, entitled the *Prayoga ratnamālā*. Hultzsch Rep. I., Nos. 161 and 638. Two inscriptions of Bhūpati are dated S'aka 1331 and 1336. (See Epigraphia Indica, Vol VI., p. 330).

,, *1424* The *Mahānāṭaka-sukti-sudhānidhi*, a poetical anthology, based on the Mahānāṭaka, by Immaḍi,-Devarāya, who, according to Dr. Hultzsch, was Devarāya II. of Vijayanagara. Hultzsch Rep., No. 526.

,, 1438 V. Saṃ. (?) 1494. Gopāla composed a commentary on the Rasamañjari of Bhanudatta. Stein, p. 271 *et. seq.*

,, 1446 V. Saṃ. 1498. The *S'rāddhaguṇa-Sangraha* composed by Jinamaṇḍana-gaṇi. L. 2792.

,, 1450 V. Saṃ. 1506. The *Lakṣmaṇotsava*, a medical compilation, made by Lakṣmaṇa, the son of Amarasiṃha of Mathurā. The compilation was made while Mahammad Khān was king in S'rīpathapura. Ulwar Ext. 430.

,, *1450* The *Gaṅgādāsa Pratāpapavilāsa*, a drama on the exploits of Gangādāsa, King of Çhampanir, in his war with Mahammad Karim Shah, son of Ahmad Shah of Gujrāt, composed by Gaṅgādhara. I.O. Cat., No. 4194.

The *Vivāda Candra* was compiled by Miśaru Miśra; under the patronage of Lakhimā devi, wife of Candrasiṃha, who was the son of Narasiṃha (Darpaṇārāyaṇa), son of Harasiṃha, son of Bhaveśa. Oxf. Cat., No. 718.

Raja-Vallabha-maṇḍana and *Vāstumaṇḍana*, composed by Maṇḍana, under the patronage of Kumbha of Mevaḍ (1419-69 A.D.). Bhr. Rep., 1882–83., p. 37.

,, 1451 V. Saṃ. 1507. The *Vākyaprakāśa*, a grammatical primer, composed by Udayadharma. B.M.C. 383.

,, 1455 One thousand nine hundred and ninety-nine years after the Nirvāṇa of Buddha (according to Ceylonese calculation) Rāma Candra Bhārati composed a commentary on the *Vṛttaratnākara.*

The author was a Bengal Brahmin, went to Ceylon; converted by Parākrama Vāhu VI (A.D. 1410-1462), and was surnamed Bauddhāgama Cákravarttin. He was an adept to the Mahāyāna School, a form of Buddhism, says Professor Bendal, almost unkown in Ceylon. B.M.C. No. 429.

A.D. 1459 V. Saṃ. 1515. The *Rudrapaddhati* composed by Parasurāma, son of Karṇa. I.O. Cat., 1786.

„ 1469 V. Saṃ. 1525. *Nyāsa*, a commentary on the *Nyāya-Mañjuṣā* composed by Hemahaṃsa gaṇi of the Tapāgaccha. B.M.C., 327-8.

A.D. 1474 S'aka 1396. The *Purāṇa-Sarvasva*, compiled by Govardhana Pāṭhaka, under the patronage of S'ubharāja Khān. L. 2068.

„ *1475* Vācaśpati Miśra, author of the *Cintāmaṇi* and other works. His *Dvaita Nirnaya* was composed by order of Jayā, wife of Bhairava Harinārāyaṇa, King of Mithilā, his *Mahādāna Nirinaya* under the patronage of Bhairava, and his *Pitṛbhakti taraṅginī*, under the patronage of Rāmabhadra. I. O. Cat. No. 1398.

1478 S'aka 1400. The *Jātaka Muktāvali-paddhati* or simply *Muktāali-paddhati*, composed at Brahmapura, on the Tāpī, in Gujrat, by S'iva Jyotirvid, son of Dhuṇḍhi, and younger brother of Divā kara. I. O. Cat. No. 3080.

1479 V. Saṃ. 1535. Birth of Vallabhācārya, the founder of the S'uddhādvaita form of Vedantism. Bhr. 1883-84, p. 76. According to Aufrecht he died in 1530 A.D. Cat. Cat., p. 535B.

1488 S'aka 1410. The *Dharmādharma prabodha*, a digest of Smṛti rules, compiled by Premanidhi, in the Nizam Shahi dominion (perhaps under the patronage of Ahmad Ibn Mahammad Shahi). L. 1999. Prof. Aufrecht has taken the date as referring to samvat era, as has been erroneously put in the manuscript. (Cat. Cat. p. 270 B.) But Ahmad Ibn Nizām Shāh was not independent before 1490 A.D. (See M. Duff, p. 317).

1489 V. Saṃ. 1545. The *Jaṭāmalla Vilāsa*, a digest of religious law, compiled by Srīdhara, under the patronage of Jaṭāmalla, younger brother of Cāyamalla, son of Bālacandra, and grandson of Dhola, the sole minister of the Lord of Delhi. I. O. Cat. No. 1593.

V. Saṃ. 1545. The *Jvaratimira Bhāṣkara*, composed by Cāmuṇḍa, a Kāyastha, while Rāja malla, son of Kumbha, was reigning in Medapāṭa (Mevād). Bik. Cat. No. 1404. Prof. Aufrecht has taken the date as referring to the S'aka era; see Cat. Cat., p. 214A., where the date of composition of the work has been given 1623 A.D. But Rājamalla ceased to rule in 1509 A.D. (See M. Duff, p. 287).

1493 S'aka 1415. The *Hari caritakāvyam*, composed by Caturbhuja, a Bengali Brāhman, of the Varendra distribution; Rep. p. 17.

1494 V. Saṃ. 1550. Dyā Dvivedī, son of Lakṣmidhara, wrote the *Nītimañjarī*. Ulwar Ext. 6.

Rāghava Bhaṭṭa wrote the *Padārthādarśa*, a commentary on the S'āradā tilaka of Lakṣmana deśika. Ulwar Ext. 669.

1495 Bipardāsa Pippalāi wrote the *Manasāra Bhāsān*. Notices, Vol. XI., pref. p. 18.

1495 Vardhamāna, who was a judge in the court of Rāmabhadra Rūpanārāyan of Mithilā, wrote *Gangākṛtya Viveka*, *Daṇḍa* O, *Paribhāṣa*°, *Smṛtitattva*° and other works. See B.M.C. Nos. 198-9 and Cat. Cat 554 B.

A.D. 1496 S'aka 1418. The epoch year of Keśava's *Grahakautuka*, Bhr. 1883-84, p. 83.

„ *1500* The *Mantra pradipā*, a Tántrika compilation by Harapati Āgamā cārya, made under the auspices of Lakṣmīnatha Kaṁsa Nārāyaṇa. L. 2011.

——*Nṛsiṃha-prasāda*, compiled under the patronage of Dalapati, minister of Nizāmsāha of Ahmednagar, may be referred to this time. Nizāmsāha ruled from 1490-1508. I.O. Cat. No. 1467.

„ 1501 S'aka 1423. The *Gaṇitattva-Cintāmaṇi*, a commentary on the *Ganitādhyāya* and *Golādhyāya* of Bhāskara's Siddhānta S'iromani by Lakṣmidāsa, Weber Cat. No. 843.

„ 1503 S'āka 1425. The *Sundara-Siddhānta*, a work of astronomy, by Jñānarāja, son of Nāga. B M.C. 452.

„ 1509 S'aka 1431. The *Dānakeli-Kaumudi*, composed by Rūpa Gosvāmi. L. 3278.

„ 1512 V. Saṃ. (1) 568. The *Kṣemaprakāśa* composed by Kṣemavarman, under the patronage of King Virasiṃha, of which place it has not been mentioned. Stein., p. 305.

„ *1512* The *Bhāvasiṃha Prakriyā* composed for Bhāvasiṃha, the son of Mediniräya of Chanderi (?). I.O. Cat. No. 909.

„ 1513 S'aka 1435. The *Srīvidyapaddhati* composed by Nijātma prakāśānanda nātha Mallikārjuna yatindra. L. 2261.

„ 1516 V. Saṃ. 1572. Vinayahaṃsa sūri wrote a commentary on the *Daśavaikālika-Sūtra*. L. 2714.

„ 1519 V. Saṃ. 1575. The *Nirnayadīpikā* by Acala Dvivedin. Ulwar Ext. 323.

„ 1520 S'aka 1442. The epoch year of Gaṇeśa's Grahalāghava. Bhr. 1883-84, p. 83.

„ *1520* Vāsudeva Sārvabhauma, the celebrated Nyāya teacher of Navadvīpa, lived about this time, under the patronage of Gajapati Pratāparudra, King of Orissā. L. 2854.

He was the teacher of the celebrated Nyāya writer Raghunātha S'iromaṇi, for which see N. N. Basu's Baṅger Jātiya Itihāsa, Brāhmaṇakāṇḍa, p. 295 Note; and Notices, 2nd series, Vol. I., p. xvi.

„ 1525 S'aka 1447. Mādhava wrote a commentary on the *Bhāsvatī Karaṇa* of S'atananda. Bhr. Rep., 1883–84, p. 82.

——Gopāla Bhaṭṭa, the author of the *Haribhaktivilāsa*, lived about this time. Notices, 2nd series, Vol. I., p. xii.

„ 1527 V. Saṃ. 1583. The *Sutra kṛtāñga dīpikā*, composed by Harṣa-Kūla, a pupil of Hemavimala Sūri of Tapāgaccha. Weber. No. 1777.

„ 1533 V. Samvat 1589. Rūpa Gosvāmi composed the *Vidagdhamādhava Nāṭaka*. Oxf. Cat. No. 305. The date, 1549 A.D., given by Mr. Aufrecht is not correct.

„ 1534 S'aka 1456. The *Bhāsvati Karaṇa dīpikā*, composed by Acyuta Bhaṭṭa. The calculations have been made, says Mr. Eggeling, from two years S'aka 1427 and S'aka 1456. I.O. Cat. No. 2918.

1535 V. Saṃ. 1591. The *Mukunda Vijaya* (astrology), composed by Parama, son of Yadumaṇi, L. 872.

Govindānanda Kavikaṅkanācārya, probably flourished about this time. He was a smṛti writer and a predecessor of Raghunandana. In his *Śuddhi Kaumudi* all the intercalary months between 1400 and 1457 Śaka have been calculated. (See Pref. *Śuddhi Kaumudi*. Ed. Bib. Ind.)

1538 Śaka 1460. The *Sūryaprakāśa Bījavyākhyā*, a commentary on the Bījagaṇita of Bhāskara by Sūrayadāsa. The commentary was composed while the commentator was 31 years of age. The author also wrote the *Gaṇitāmṛtakupikā*, a commentary on the *Lilavatī*, in Śāka 1463=1541 A.D. I.O. Cat. No. 2823. The date of composition given by Mr. Eggeling is incorrect.

Kṛpārāma composed the *Bījaganitoddhāraṇam*. Ulwar Ext. 528.

1541 Śaka 1463. The *Bhaktirasamṛtasindhu*, composed by Sanātana Gosvāmi. I.O. No. 820.

1543 Śaka 1465. The *Bālabodhinī*, a commentary on the Bhāsvatī by Balabhadra. L. 765.

1545 Śaka 1467. Gaṇeśa composed the *Buddhi vilāsini*, a commentary on the *Līlāvati*. Ulwar Ext. 568

1546 V. Saṃ. 1602. Lakṣmaṇa Bhaṭṭa composed the *Gotra-pravara-ratna*. Bik. Cat. No. 933.

1547 V. Saṃ. (?) 1603. Mayureśvara compiled the *Vaidyāmṛtam*. Ulwar Ext. 440.

1548 Śaka 1470. Birth of Nṛsiṃha Daivajña, son of Rāma, grandson of Keśava and nephew of Gaṇeśa. Author of the *Grahakaumudī*. I.O. Cat. No. 2945.

1549 Śaka 1471. Rūpagosvāmi composed the *Utkalikāmañjarī*. L. 3178.

1550 Śaka 1473. The *Svaramela Kalānidhi*, a work on Music, composed by Rāmāmātya. Hultzsch. Rep. I., No. 573.

1550 The probable date Appayadikṣita, the celebrated author of a number of works; wrote under the patronage of Cinna Boma Nāyaka of Velur, whose inscriptions are dated Śaka 1471 and 1488. From the colophon of the Kuvalayānanda, it appears that the book was composed under the orders of King Veṅkaṭa (Oxf. Cat., p. 213A). Mr. Aufrecht identifies him with Veṅkaṭa of Vijayanagara (about 1535 A.D.); while Dr. Hultzsch identifies him with Veṅkaṭa I of Pennakoṇḍa, whose inscriptions range from Śaka 1508 to 1535. Hultzsch. Rep. 2, pp. xii and xiii. Raghunandan, the celebrated law-giver of Bengal, flourished about this time. Notices of Sanskrit MSS. Vol I. (2nd series), p. xii.

1551 Śaka 1473. The *Ratrī-samvit-pradīpayantram*, composed by Dāmodara, during the reign of Malladeva of Jodhpur. Ulwar Ext. 563.

1552 V. Saṃ. 1603. The date of the first copy of the Lokaprakāśa, an elaborate dissertation on Jaina geography by Vinayapāla. L. 2608.

1553 Śaka 1474 (expd.). The *Rasika rañjanī*, a commentary on the Rasataraṅgiṇī, composed by Veṇidatta Śarmaṇ. I.O. Cat. No. 1216.

A.D. 1555 V. Saṃ. 1611. Jayarāma composed a commentary on the *Kātīya-gṛhy-sūtra* entitled the *Sajjana-vallabhā*. Ulwar Ext. 39.

,, 1556 L. Saṃ. 443. The *Tattva-cintāmanyāloka-pariśiṣṭa*, by Devanātha. The date is the date of a MS. written for the author by Rāghava. Notices (2nd series) Vol. III., No. 116.

,, 1558 Śaka 1480. The *Dakṣiṇā-kālikā-Saparyā-kalpalatā*, composed by Sundarācārya at Jālandhara. Bik. Cat. No. 1260.

,, 1559 Śaka 1481. Harihara Bhaṭṭacārya composed the *Samaya-pradīpa*. L. 1088.

,, *1560* The *Smṛti Kaustubha*, composed by Anantadeva, son of Āpadeva, under the patronage of Baz Bāhādur of Malwa (?) who was a contemporary of Akbar. Ulwar Ext. 368.

,, 1562 Śaka 1484. The epoch year of Raghunātha's *Karaṇa*. Bhr. 1883-84, p. 83.

,, *1565* The *Alaṅkāraśekhara*, by Keśava Miśra, was composed under the patronage of Māṇikyacandra of Koṭ Kāṅgrā. I.O. Cat. No. 1197. Both Mr. Eggeling and Mr. Bühler are erroneous in their identification of Māṇikyacandra (See Cunningham A.S.R., Vol. V., 152). See also Cat. Cat. Vol. III.

,, 1566 Śaka 1488. The *Mantrārādhana-dīpikā*, composed for Mahārājādhirāja Arjunadeva, son of Mahārājā Kālidāsa, by Yaśodharā, son of Kaṃsāri Miśra. Ulwar Ext. 654.

,, 1568 V. Saṃ. (?) 1624. The *Sukhabodha*, a work on medicine, by Vaidyarāja, son of Viśārada. I.O. Cat. No. 2679.

,, 1569 V. Saṃ 1625. The *Kātantra-Vibhrama-Sutra*, an Avacuri or gloss on the Kātantra grammar by Cāritrasiṃha. I.O. Cat. No. 789.

,, *1570* Mathurānātha Tarkavāgīśa, a distinguished pupil of Raghunātha, lived about this time, and wrote a number of works. Notices (2nd series) Vol. I, p. xvi.

,, 1570 Śaka 1492. The *Rāgamālā*, composed by Kṣemakarṇa Pāṭhaka, son of Maheśa Pāṭhaka, for Jāṭabendra Nṛpati. I.O. Cat. No. 1125.

,, 1571 4673. Kaliyuga era. The epoch year of the *Sūrya-siddhānta-vivaraṇa* of Bhūdhara, son of Devadatta. Oxf. Cat., p. 327. L. 1817.

,, 1572 Śaka 1493 (expd.). Pūrṇānanda Paramahaṃsa compiled the *Śāktakrama*, a summary of Tāntrika rules. L. 2067. The author composed his Tattva-cintāmaṇi in Śaka 1499. L. 1099.

Śaka 1494. The *Muhūrtta mārttaṇḍa* with the *Mārttaṇḍa-vallabhā* by Nārāyaṇa, son of Ananta, grandson of Kṛṣṇa. W. No. 379.

,, 1573 V. Saṃ. 1629. The *Sāṅkhāyana-gṛhya-sūtra-pradīpakam* composed by Nārāyaṇa. Ulwar Ext. I. Weber No. 1423.

K. Y. 4675. Cintāmaṇi Miśra composed the *Vāṅmaya-viveka*. L. 2837.

,, 1576 Śaka 1498. The *Gaura-gaṇoddeśa-dīpikā* composed by Kavi Karṇapura. Notices (2nd series) II. 60.

,, 1577 V. Saṃ. 1633. Vīrabhadra, a prince of the Baghela dynasty, son of Rāmacandra, son of Vīrabhānu, wrote a commentary on the *Vātsāyana Sūtra*. Peters. Rep. 2., p. 66.

A.D. 1578 Śaka 1500. The ***Kheṭa-siddhi*** or *Laghu-kheṭasiddhi* composed by Divākara. I.O. Cat. No. 2947.

V. Saṃ. 1634. The *Vīracampu* was composed by Padmanābha Bhaṭṭācārya, in honour of Vīrabhadra of the Baghela dynasty. Peterson I., p. 107. The author wrote the *Samaya pradīpa* under the patronage of queen Durgāvatī of Gaḍhā. I.O. Cat. No. 1680.

1580 The *Vikhyāta-vijaya*, a drama, composed by Lakṣmaṇa Māṇikyadeva, one of the Bhūyās, in the time of Akbar. Notices, 2nd series 2, 186.

The *Todalānanda*, was composed about this time under the patronage of Todarmalla. See Nepal Cat., p. xxviii.

1584 Śaka 1506. The *Jātakapaddhatyudāharaṇa* composed by Divākara about this time. The calculations are made from this date. I.O. Cat. No. 3093.

V. Sam. (?) 1640, Cyclic year Khara. The *Rasapradīpa*, composed by Bhaṭṭāraka Prabhākara. I.O. Cat. No. 1205.

1585 V. Saṃ. 1641. The epoch year of Bhāsvatī Vyākhyā of Kuvera. The author was a Bengal Brāhmaṇa. Notices (2nd series) 2, 162.

1587 Śaka 1509. The date of composition of Nīla Kaṇṭha's *Varṣatantra*. See Gaṇaka Taraṅgiṇī, p. 68. See also I.O. Cat. No. 3045.

1588 V. Sam. (?) 1644. The *Bālatantra*, by Kalyāṇa, son of Mahīdhara. L. 818.

Śaka 1510. *Subodhinī*, a commentary on the *Vedāntasāra*. by Narasiṃha (Nṛsiṃha) Sarasvatī, pupil of Kṛṣṇānanda. C.S. Vol. III., No. 132. Ulwar No. 574.

1588 V. Saṃ. 1644. Mahīdāsa wrote a commentary on the *Līlāvatī*. Bhr. Rep. 1883-84, p. 82.

Śaka 1510. A MS. of *Kṛtyakalpataru*, in Bengali character. Written for Vidyānivāsa Bhaṭṭācāryya, who was the father of Viśvanātha Tarkapañcānana, the well-known author of the Bhāṣāpariccheda. Nepal. Cat. pref., p. xvi. See also Eggling, p. 409B,

This settles the date of Bhāṣā-pariccheda which might have been written at no distant time.

1589 V. Saṃ. 1645. Naracandra Sūri, commentary on the *Prākṛta Vyākaraṇa* of Hemacandra. Peterson Rep. I. 54.

——. Mahīdhara compiled the ***Mantra Mahodadhi*** with Naukā under the patronage of Lakṣmīnṛsiṃha. Ulwar, 2267. (See also I.O. Cat.).

——. The *Jambudvīpa-prajñaptivṛtti* composed by Puṇyasāgara Mahopādhyāya, in the fort of Jessalmir, while king Bhīma was reigning. (This date is unknown to M. Duff). L. 2889.

Śaka 1511. The *Bhaktiratnākara* composed by Gopāladāsa. L. 2918.

1590 Śaka (?) 1512). The *Puraścaraṇa-dīpikā* by Candraśekhara. Notices (2nd series) 2, 127.

V. Saṃ. 1646. The *Sūlvasuttra-Vivaraṇa* by Mahīdhara,composed at Benares. L. 753.

——. The *Rāghavī-vṛthi*, a commentary on the *Raghuvaṃśa* by Guṇavinaya Gaṇi. L. 3060.

V. Saṃ. 1646. The *Damayauti-kathā-vṛtti* composed by the same. B. M. C. 283.

A.D. 1591 Śaka 1512. Thirty-fifth year of the reign of Akbar the great. Rāmavinoda compiled by Rāma Bhaṭṭa, the son of Daivajña Ananta Bhaṭṭa, under the patronage of Rāmadāsa, an officer (Amātya) of Akbar. Ulwar Ext. 564.

The author composed the *Muhūrtta Cintamaṇi* in Śaka 1522. See *Gaṇaka Taraṅgini*, p. 72.

,, 1592 Śaka 1574. Rāghavendra Sarasvatī wrote a commentary on the *Surya-sataka*. Ulwar Ext. 676.

,, 1593 Saka 1515. The *Janma-cintāmaṇi* composed by Śiva Daivajña. W. No. 878.

,, 1595 V. Saṃ. 1651. The *Pravacana-sāra Bālabodha*, a commentary on the Pravacana sāra, composed by Padmamandira Gaṇi. L. 3265.

,, 1596 V. Saṃ. 1652. The *Rāmacaritam* or *Rāmāyaṇa* composed by Padmadeva Vijaya Gaṇi. L. 3396.

——. Kanaka Kuśala of Tapāgana wrote a commentary on the *Bhaktāmara-stotra*, and another on the *Kalyāṇamandira Stotra*. W. 1968.

,, 1598 Śaka 1520. The *Āhṇikamañjarī Ṭīkā* composed by Vireśvara. Bik. Cat. No. 768.

,, 1599 Śaka 1521. The *Abhirāma-maṇi-nāṭaka* composed by Sundara Miśra. Oxf. Cat. No. 269.

,, 1603 Śaka 1525. The *Sūrya-siddhānta-gūḍhārtha-prakāśa*, a commentary on the *Sūryasiddhānta*, by Raṅganātha, son of Ballāla, Gaṇak-taraṅgiṇī, p. 79, 91.

In the same year was born his son Munīśvara, who wrote the *Siddhānta-śiromaṇi-marīcī* and also the *Siddhānta Sārvabhauma* in Śaka 1568.

,, 1604 L. Saṃ. 491. The *Kaṇṭakoddhara*, a gloss on the *Pratyakṣa Cintāmaṇyāloka* of Jayadeva Miśra, by Madhusūdana Thakkura. L. 1764. Jayadeva must have flourished earlier.

——. V. Saṃ. 1660. Jñānatilakagaṇi wrote the *Gautama Kulaka Vṛtti*. He was a pupil of Padmarāja Gaṇi. L. 2613, Peters. 4, xlvi.

,, 1605 Śaka 1527. The *Tattvabodhinī*, a commentary on the *Ānandalahari* of Śankarācāryya, by Mahādeva Vidyāvāgīśa. C. S. Vol. II., No. 613.

,, 1607 V. Saṃ. 1663. The *Pravāsa Kṛtya* composed by Gangādhara. L. 701.

,, 1608 Śaka 1630. V. Saṃ. 1665 (current). Nārāyaṇa composed the *Nārāyana-prabandhah*. Stein, p. 355.

,, 1608 Śaka 1530. The *Rāmaliṅgāmṛtam*, a poem in 18 cantos composed by Advaita. I.O. Cat. No. 3920.

——. The *Saurapakṣakaraṇa* composed by Viṣṇu Daivajña. Gaṇaka Taraṅgiṇī, p. 64.

,, 1609 Śaka 1531. The *Siddhāntamañjarī* (astronomy) composed by Maṭhurānātha Vidyālaṅkāra. I.O. Cat. No. 2904.

,, 1612 Śaka 1534. Viśvanātha wrote a commentary on the *Grahalāghava* of Gaṇeśa. The commentator also wrote a commentary on the *Pātsārani* of Gaṇeśa in Śaka 1553. Bhr. Rep. 1882-3. No. 29. For further particulars of the author see *Gaṇaka Taraṅgiṇī*, p. 82.

——. V. Saṃ. 1668. Kamalākara Bhaṭṭa wrote the *Nirṇayasindhu*. I.O. Cat. No 1584-5. Prof. Aufrecht in Cat. Cat., p. 80, gives the date 1616. See also L. 4233.

A.D. 1613 Śaka 1535. Gopāla Nyāyapañcāṇana wrote a commentary on the Tattvas of Raghunandana. This date is the date of his *Aśauca Nirṇaya*. L. 3188.

Śaka 1535. Gaṇeśa Daivajña, son of Gopāla, wrote the *Jātakābharaṇa*. L. 2443.

1614 ——. Śaka 1536. The *Svarodaya-dīpikā*, a commentary on the *Narapatijayacaryā*, by Jagajjyotirmalladeva king of Nepal. Nepal Cat., p lxiii.

1618 Śaka 1540. K. Y. 4719. The *Padārtha-kaumudī*, a commentary on the *Amarakoṣa* composed by Nārāyaṇa Cakravarttin. I.O. Cat No. 958-9.

——. V. Saṃ. 1674. The *Gītarāghava* composed by Prabhākara, Bhr. 1882-3, p. 9.

1619 Śaka 1541 The date of Śankara Kavi's commentary on Bhāskara's *Siddhānta Śiromanṇi*. Bhr. 1882-3, p. 27.

——. The *Kuṇḍamaṇḍapa-siddhi* by Viṭṭhala Dīkṣita. Oxf. Cat. No. 798.

1620 V. Saṃ. 1677. *Sumatiharṣa* composed a commentary on the *Tājikasāra*. I.O. Cat. 3059.

1621 V. Saṃ 1677. The *Kālatattva-vivecanam* by Bhaṭṭa Raghunāta. I.O. Cat. No. 1667-8.

Śaka 1543. The *Siddhānta Śiromaṇi Vāsanāvārttika* by Nṛsimha. I.O. Cat. No. 2857-8.

1622 V. Saṃ. 1678. The *Gaṇaka-kumuda-kaumudī* composed by Sumati Harṣa Gaṇi B.M.C. 464.

1623 V. Saṃ. 1679. Nandapaṇḍita wrote the *Keśava Vaijayantī*, author also of *Dattaka Mīmāmsā*. I.O. Cat. No. 1342.

1624 V. Saṃ. 1680. The *Kṛṣṇalīlā-kāvya*, composed by Madana, son of Kṛṣṇa. I.O. Cat. No. 3880.

——. The *Dhāturatnākara* or *Kriyā-kalpalatā*, a grammatical treatise composed by Sādhusundara Gaṇi. B.M.C. 382.

1625 Bhaṭṭoji Dīkṣita, the author of *Siddhānta Kaumudī* and other works, wrote about this time. His *Tattva Kaustubha* was written under the orders of Veṇkaṭendra of Keladi (1604-1626). Hultzsch. Rep. 2., xii.

——. The probable date of composition of the *Vīramitrodaya*, a commentary on the institutes of Yājñyavalka, by Mitra Miśra, under the patronage of Vīrasiṃha-deva of Bundelkhaṇḍ. According to Prof. Bühler, this chief murdered Abul Fazl at the instigation of Prince Salim (Jahangir). I.O. Cat. No. 1288.

1626 V. Saṃ. 1582. Ananta Bhaṭṭa compiled the *Vidhāna-pārijāta*. I.O. 1468.

Śaka 1548. Divākara, son of Nṛsiṃha, wrote a commentary on the *Jātakarmapaddhati* of Keśava. Ulwar Ext. 460.

N.S. 746. The *Ślokasārasaṅgraha* and the *Saṅgītasāra-saṅ-*

graha, compiled by Jagajjyotirmalla, king of Nepal. Nepal Cat. pp. xxxv and xli.

A.D. 1627 Śaka 1549. The *Sāramañjari*, a work on divination, compiled from various sources, by Vanamāli Miśra. I.O. Cat. 3006.

—— Viṭṭhala Dīkṣita composed the *Muhūrtta Kalpadruma*. I. O. Cat. 3021.

„ 1629 V. Saṃ. 1685. Nityānanda, son of Devadatta, composed the *Siddhānta-sindhu*, under the orders of Sah Jehan. Ulwar Ext. 600.

„ 1630 V. Saṃ. 1686. Samaya Sundara, pupil of Śakalacandra, wrote the *Gāthāsāhasri* and the *Kalpalatā*, a commentary on the *Kalpa-Sūtra*. Peterson Rep. 3, p. 3.

——. The *Apekṣitavyākhyāna*, a commentary on the *Uttararāmacarita* of Bhavabhūti, by Bhaṭṭa Nārāyaṇa, son of Raṅganātha Dīkṣita. L. 2479. Prof. Aufrecht takes the date 1686 as referring to Saka era. But I think "Vikramārkasya Śāke" means simply in the year of Vikramāditya.

——. Śaka 1552. The *Prastāracintāmaṇi*, composed by Cintāmaṇi Jyotirvvid, with a commentary. I.O. Cat. 1103.

„ 1633 Śaka 1554, month of Māgha, the *Muhūrttālaṅkāra* composed by Gaṅgādhara Daivjña. Stein, p. 343.

Śaka 1555. Rājarsi, son of Kalyāṇa, composed the *Daśācintāmaṇi*. L. 2970.

——. Viṣṇupurī composed the *Bhaktiratnāvalī*, with its commentary Kāntimālā. C. S. IV., No. 91.

—— *Śiśubodhinī*, a commentary on the *Varṣatantra* of Nīlakaṇṭha by his grandson Mādhava, son of Govinda, a paṇḍit in the court of Jahaṅgīr. Ulwar Ext. 571

„ 1635 V. Saṃ. 1692. Ananta paṇḍita wrote a commentary on the *Rasamañjarī* of Bhānudatta. I.O. Cat. 1224.

——. Śaka 1557. Raghuvīra Jyotirvvid composed the *Muhūrtta Sarvasva*. L. 204.

„ 1636 V. Saṃ. 1692. Viśvanātha, the son of Nṛsiṃha, composed a commentary on the *Paraskara-gṛhya-sūtra*. Ulwar Ext. 42.

„ 1638 Śaka 1560. Vidyādhara composed the *Grahavidyādhara*, under the patronage by Vīrabhadra of Rājakoṭa. I.O. Cat. 2961. The author also wrote the *Pañcāṅga Vidyadharī*, under the patronage of the same person. I.O. Cat. No. 2960.

V. Saṃ. 1694. Jinādivijaya composed a commentary on the Vākyaprakāśa of Udayadharmma. B.M.C. 383.

Śaka 1560. Haridatta composed the *Jagadbhūṣaṇa*, under the patronage of Jagatsiṃha, son of Kṛṣṇasiṃha of Mevad. Jagatsiṃha is said to have started an era of his own commencing from Śaka 1550, the first year of his reign. L. 3118.

„ 1639 Śaka 1561. Durgādāsa wrote his commentary on the *Kavikalpadruma* of Vopadeva. The author's Mugdhabodha was commented upon by the same commentator. I.O. Cat. No. 880.

„ *1640* The *Bhagavanta Bhāṣkara*, a big smṛti compilation made by Bhaṭṭa Nīlakaṇṭha, son of Bhaṭṭa Śaṃkara, under the patronage of Bhagavantadeva, a Rājput chief of the Śeṅgara clan. I.O. Cat. No. 1439.

A.D. 1640 V. Saṃ. 1696. Gaurīpati, the son of Dāmodara, wrote a commentary on the *Ācārādarsa* of Srīdatta. Bbr. Rep. 1883-4, p. 47.

1642 V. Saṃ. 1698. The *Vṛttaratnāvalī*, a treatise on medicine, composed by Maṇirāma Miśra, at Lucknow. I.O. Cat. 2702.

——. The *Vārāṇasīdarpaṇa Kāśikā* composed by Vatsarājā. L. 765.

1643 Śaka 1565. Vedāṅgarāya wrote Pārasiprakāśa to please Emperor Sah Jehan. Bhr. Rep. 1882-3, p. 34.

1644 V. Saṃ. 1700. The *Kālikārcana-candrikā* composed by Jagadānanda. L. 270.

1646 Śaka 1568. The *Ratnakalāpa*, an elementary compilation of astronomy and astrology by Viṣṇudeva. Nepal Cat., p. xxx.

——. Viśvarūpa, *alias* Muniśvara, wrote Siddhānta Sārvabhauma. B.M.C. 464.

V. Saṃvat 1702. Ananta Paṇḍita, son of Tryambaka paṇḍita, wrote a commentary on the *Āryā Saptaśatī*. I.O. Cat. No. 4012.

1647 Śaka 1569. The *Siśubodhinī*, an elementary astrology composed by Śiva Chakravartti. L. 420.

1648 ——The *Kṛtya-ratnāvalī* compiled by Rāmacandra Bhaṭṭa, son of Viṭṭhala Bhaṭṭa. I.O. Cat. No. 1623.

1649 Śaka 1571. The *Vedānta-sūtra-vyākhyā-candrikā*, a commentary on the *Vedānta Sūtras* by Mahāmahopādhyāya Śri Bhavadeva Miśra. I.O. Cat. No. 2270.

1650 Jagannātha Paṇḍitarājā, lived in Delhi, as the court paṇḍit of Dara Sheiko, son of Śah Jehan, wrote a number of works, of these the *Bhāminīvilāsa* and the *Manoramu-kuca-mardana*, an adverse criticism on Bhaṭṭojī's Manoramā, are well-known. See Cat. Cat., p. 196.

Viśveśvara Bhaṭṭa, *alias* Gāgā Bhaṭṭa, the author of *Sivārkodaya* and other works, lived about this time. His *Sivārkodaya* was written in honour of Śivajī. Ulwar Ext. 117.

1652 Śaka 1574. The *Sandhyābhāṣyam*, by Parivrājaka Rāmāśrama. Ulwar Ext. 362.

1655 Śaka 1577. Vaṃśamaṇi composed the *Gita-digambara Nāṭakam*, on the occasion of the Tulāpuruṣadāna by Pratāpamalladeva, King of Nepal. Nepal Cat., p. xxxvi.

——. The *Prayāgatattvam*, a manual of religious rites to be performed at Prayāga, compiled at Benares, by Raghunātha Sūri, son of Bhānuji. I.O. Cat. No. 1578.

1656 ——The *Hāyanaratna* composed by Balabhadra, while Sāhsuja was ruling at Rājamahal. W., p 264, L. 4090, Cat. Cat., p. 765B. Gaṇaka Taraṅgiṇī, however, gives the date śaka 1564, as the date of composition of the work.

V. Saṃ. 1712. The *Vikramorvvaśiprakāśa*, a commentary on the *Vikramorvaśī*, by Raṅganātha, the son of Bālakṛṣṇa. I.O. Cat. No. 4121.

1657 V. Saṃ. 1713, Śaka 1578. The initial year of the era of Phatte Sāh, according to Phattesāhprakāśa, a manual of astronomy composed in the 48th year of the era of Phatteshāh by Jaṭādhara. Bhr. 1883-4, p. 84.

A.D. 1658 · Śaka 1580. The *Siddhāntatattvaviveka*, a manual of astronomy by Kamalākara, son of Nṛsiṃha. I.O. Cat. No. 2890-91.

„ 1661 Śaka 1583. The *Smārtta vyavasthārṇava* compiled by Raghunātha Sārvabhauma, son of Mathuresa Tarkapañcānana, under the orders of Rāya Rāghava. L. 493.

——. The *Cikitsāratnāvalī* composed by Kavicandra, son of Kavikarṇapura. I.O. Cat. 2710.

——. The *Muhūrtta Dīpaka* by Mahādeva. Oxf. Cat. No. 790.

„ 1662 V. Sam. 1718. The *Amṛtalaharī*, a gloss on Vālmiki's hymn to the Ganges, composed by Harinātha Gosvāmī, son of Manohara Gosvāmī. L. 3334.

„ 1664 Śaka 1586. The *Dhāturatnākara*, a metrical arrangement of roots, in imitation of Kavikalpadruma of Vopadeva, composed by Nārāyaṇa. I.O. Cat. No. 881.

„ 1666 Śaka 1588. Mathureśa Vidyālaṅkāra wrote a commentary on the *Amarakoṣa*, entitled Sārasundarī. I.O. Cat. Nos. 968, 969, 975; L. 2465.

The same author perhaps wrote the *Śabda-ratnāvalī*, under the patronage of Musā Khān. I.O. Cat. No. 1016.

„ *1669* The *Jyotpattisāra*, composed by Vidyānātha under the auspices of Anupasiṃha king of Bikanir. Bik. Cat. No. 661.

The *Anūpavilāsa*, a smṛti compilation by Maṇirāma, under the patronage of this king. Ulwar Ext. 287.

For the *Anūpasangitavilāsa*, compiled by Bhāva Bhaṭṭa, under the patronage of the same king, see Bik. Cat. No. 1091.

„ 1670 Sana 1077. The *Sabhākaustubha*, compiled by Rāma Nārāyaṇa Mitra. Notices (second series) II 240.

„ 1671 Śaka 1593. Ratnakaṇṭha writes a commentary to the *Yudhiṣṭhiravijaya-kāvya* of Vasudeva. L. 2441.

„ 1672 V. Saṃ. 1728. Śaṅkara Bhaṭṭa, son of Nīlakaṇṭha Bhaṭṭa, wrote the *Kuṇḍodyota-darśana*. I.O. Cat. 3164.

„ 1675 N.S. 795. The *Hastamuktavalī sārasamuddhṛtikā*, composed by Ghanaśyāma, for Ananta the daughter's son of Jagajjyotirmalla. Nepal Cat. xlii.

„ 1676 Śaka 1598. The *Prabodhamihirodaya*, compiled by Rāmeśvara Tattvānanda. C.S. V. 49.

V. Saṃ. 1732. The *Vṛtta-ratnākara-setu* composed by Haribhāskara. L. 712.

„ 1679 V. Saṃ. 1735. The *Dāna-manohara*, composed by Sadāśiva, under the patronage of king Manoharadāsa, son of Gopāladāsa of Solapur. Bik. Cat. No. 803.

„ *1680* The *Kuvalayānanda Khaṇḍana alias* the *Alaṅkara-sāra-sthiti*, by Bhimasena Dīkṣita. The work was composed in Jodhpur while Ajitasiṃha was reigning. L. 4084.

„ 1682 V. Saṃ. 1738. The *Vaidyarahasya-paddhati*, composed by Vidyāpati. L. 1480.

„ 1683 Śaka 1605. The *Navaratna*, an elementary astronomical work, composed by Dāmodara Bhaṭṭa. Nepal Catalogue, p. xxxi.

„ 1685 Śaka 1607. Gaṅgādhara wrote a commentary on the *Bhāsvatīkaraṇa* of Śatānanda. Ulwar Ext. 555.

A.D. 1686 Śaka 1608. The date of composition of the *Bhāvanāmṛta* or *Kṛṣṇabhāvanāmṛta*, on the incidents during Kṛṣṇa's residence in Gokula and Vṛndāvana. The name of the author is not given. I.O. Cat. No. 3876. The date given by Mr. Eggeling is not correct.

V. Saṃ. 1742. The *Muhurtta-gaṇapati* composed by Gaṇapati. I.O. Cat. No. 3027.

1687 V. Saṃ. 1743. The *Ācārārka*, compiled by Divākara, son of Mahādeva. I.O. Cat. No. 1616.

1688 Śaka 1610. The *Paribhāṣāvṛtti* by Rāmacandra Vidyābhuṣaṇa. Notices 2nd (series) Vol. I., No. 222.

1689 V. Saṃ. 1745. The *Rasakalpadruma*, an anthology compiled by Caturbhuja for Sāyesta Khān. Ulwar Ext. 225.

1690 N. S. 810. The *Aśvamedha-nāṭakam* composed by Sumati-Jitāmitra. Rep. p. 18.

1691 Śaka 1613. The *Kuṇḍamārttaṇḍa*, composed by Govinda. Bhr. 1882-3, p. 37.

1692 Śaka 1614. Ananta, son of Siddheśvara, composed a commentary on the *Kunda-mārttaṇḍa* of Govinda. Bhr. 1882-3, p. 37.

——. The *Svārājyasiddhi*, with the commentary Kaivalyakalpadruma, composed by Gaṅgādhara Sarasvatī. B.M.C. 302.

1694 V. Saṃ. 1750. Mahādeva Vedāntin composed a commentary on the *Viṣṇusahasranāma*. W. 1524.

1696 V. Saṃ. 1752. Bhāskara Bhaṭṭa, son of Āyāji Bhaṭṭa composed the *Suddhiprakāśa*. I O. Cat. No. 1745.

Prof. Aüfrecht, in Cat. Cat. p. 658B., says that this book has been quoted by Raghunandana. But Raghunandana flourished earlier.

1697 Śaka 1619. The *Vaidyavilāsa*, composed by Rāghava. Ulwar Ext. 438.

1698 V. Saṃ. 1774. The *Rasacandra*, composed by Ghāsirāmakavi.

The chronogram in the colophon says Śāke, but it must be Samvati, otherwise the MS. would be older than the date in the chronogram. I.O. 1210.

List of Abbreviations.

Cat Cat.	...	Catalogus Catalogorum.
I.O. Cat.	...	India Office Catalogue.
Oxf. Cat.	...	Catalogus Codicum Sanskritorum by Aüfrecht..
B.M.C.	...	British Museum Catalogue by Prof. Bendal.
Bhr.	...	Bhandarkar's Reports on the Search of Sanskrit Manuscripts.
L.	...	Notices of Sanskrit Manuscripts, by Dr. Rājendralāla Mitra, Vols. I-IX. Vols. X and XI by Mahāmahopādhyāya Haraprasāda Shāstri.

Bik. Cat. ...	Bikanir Catalogue of Dr. Rājendralāla Mitra.
Notices (2nd series) ...	Notices of Sanskrit MSS. 2nd series, by Mahāmahopādhyāya Haraprasād Śāstrī. Vols. I., II. and III.
Nepal Cat. ...	Catalogue of MSS. in the Darbar library in Nepal, by Mahāmahopādhyāya Haraprasād Śāstrī.
Rep. ...	Report on the Search for Sanskrit MSS. for the years 1895–1900, by Mahāmahopādhyāya Haraprasād Śāstrī.
Peterson ...	Reports on the Search for Sanskrit MSS. by P. Peterson.
Ulwar ...	Ulwar Catalogus by P. Peterson.
Stein ...	Catalogue of Sanskrit MSS. of H.H. the Mahārājā of Kāshmīr and Jammu by M. A. Stein.
C.S. ...	Catalogue of Manuscripts in the Government Sanskrit College Library, Calcutta.
W. ...	Weber's Berlin Catalogue.
B.N. ...	Buniyon Naujio's Catalogue of the Chinese Translation of the Buddhist Tripiṭaka.
Ep. Ind. ...	Epigraphia Indica.

33. Notices of Orisa in the Early Records of Tibet.

By *Rai* Sarat Chandra Das, *Bahadur*, C.I E.

Nāgarjuna, the reputed founder of the Mahāyāna school of Buddhism (well known by the name Siddha Nāgarjuna in the Sanskrit medical works of India) is said to have enclosed the great Caitya-temple of Dhānya Kaṭaka [heap of unhusked rice] by building a wall round it. He also built one hundred shrines (devālaya) inside that enclosure.

When the grandson of Emperor Açoka named Mahāpadma was reigning in Magadha, a rich Brahman of Orisa named Ghapa became a convert to Buddhism. Under inspiration from gods received in dreams, he served the Buddhist congregation, consisting of many thousand monks for a period of three years. It is said that, in consequence of his devotion to Buddhism, the gods had showered precious stones on his house, which enabled him to daily feed a hundred thousand beggars (p. 81 *Pagsam Jonzan̂*).

In later times, long after the death of king Mahāpadma the son of Nanda, there reigned in Orisa a king named Candra Pālita. In his residence the *Bodhisattva* Mañja Çri, in the guise of a Brāhmaṇa, used to pay visits and preach the Mahāyāna doctrine of Buddhism. Here that Brāhmaṇa left a volume of the scriptures of the Mahāyāna school. It was about this time that Kaniṣka, king of Jvalandhra had imbibed faith in Buddhism, by hearing discourses on its sublime tenets from the sage Sudarçana (the junior). Hearing that Siṃha, king of Kashmir, had taken the vows of Renunciation, he visited Kashmir and occupied it. Here he patronized Buddhism and heard religious discourses from some of the great masters of that religion (p. 82).

Orisa was variously called by the names Oṭivisa, Oṭvisa, Oṭṭisthāna, Dhana Çri-dvīpa, Dhana Çri-bhûmi, etc. In Tibetan, it is translated by the term འགྲོ་ལྡིང་། Do-ding "the one soaring on high." In the work Pagsam Jonzan̂ which was compiled from the work called Deb-ther n̂on-po དེབ་ཐེར་སྔོན་པོ (the ancient records of Tibet), it is stated that Çridhānya Kaṭaka was a holy place in the country of Dhana Çri (p. 99). In the same work it is further mentioned that Candra Gomi, the author of Candra

Vyākaraṇa, visited Orisa. In Dhana Çrīdvīpa he performed religious ceremonies in the great Vihāra of Çridhānya Kaṭaka and established about a hundred chapels (devālaya) (p. 96).

VASUMITRA.

The sage Vasumitra resided for some time in Orisa where the Brāhman Makṣika had received instruction in Buddhist sacred literature from him during the time. It is also stated that while he was preaching the *Dharma* (Buddhism) in Orisa a mine of precious stones was discovered there.

DIŋNĀGA.

Diŋnāga, who had studied metaphysics and logic under Vasumitra, was able to recite from memory five hundred *sūtra.* He performed ascetical meditation (Samādhi) for many years, by residing in the rock-cavern of Bhora Çila in Orisa. Here, on account of his great learning, he is said to have been miraculously visited by *Bodhisattva* Mañju Çrī.

From Orisa he travelled to Nālanda and was present at the great religious disputation, which was held there by the Brāhmaṇs, under the lead of a famous Brāhmaṇ logician named Subur-jaya (probabhy Sudûrjaya, the unconquerable), with the Buddhists. Diŋnāga completely defeated the *Tirthika* disputants and became famed as the Tarka Puṅgava (chief logician). He wrote about 100 metaphysical treatises. Afterwards, returning to Orisa, he wrote his famous philosophical work called the Pramāṇa samuccaya of which the literal translation exists in Tibet After visiting Southern India and diffusing Buddhism there, he returned to Orisa. Here he was invited by a Brāhmaṇ minister of the king of Orisa, named Bhadra Pālita, in whose garden he resided. In this garden there was a medicinal tree of great value which was found withering. Diŋnāga brought life to it by his holy touch and prayerful blessings. Here the great philosopher died

TRIRATNA DĀSA.

At a place called Utkala, on the sea coast of Orisa, when a monster venomous serpent had issued forth from the sea, the Buddhist sage Triratna Dāsa saved the people from the ravages of the dreaded visitor, by the efficacy of his charms (Tārā mantra).

He became so greatly famous for his learning and wisdom that he was surnamed the second Virācārya (the first being Açvaghoṣa of Kaniṣka's time). He established fifty religious institutions in Orāvira in the Dakṣin. He became a disciple of the sage Vasumitra and cultivated friendship with the philosopher Diŋnāga. He wrote a *Strotra* on the *Anantaguṇa* (he of boundless virtues) of which an abridgment was made by Diŋnāga. About this time the cause of Buddhism was greatly advanced by the Brāhmaṇ Bhadra Pālita of Orisa.

Ânandagarbha, the Yogācārya (professor of yoga), was born in a Vaiçya family of Magadha. Though he was first initiated in the Mahā Sāngika sect of the Hinayāna school of Buddhism, he latterly became a convert to the Yogācārya sect of the Mādhyamika school. After becoming a learned man, by studying in the University of Vikrama Çila, he visited Bangala. Here he became an adept in the practice of Yoga Tantra under Subhûti Pālita, the pupil of king Prakāça Candra of Bangala, who had renounced the world and by the practice of *yoga* had become a *Siddhā* (adept). This saintly king is said to have been miraculously visited by the Vajradhātu.[1]

Ânandagarbha presented his Tantrik work called Vajrasambhava to Prajñāpālita and other Buddhist pandits who had come to him from Magadha. At this time Bangala was the centre of Tantrik lore. He had also had imparted spiritual light (*Tattvāloka*) to king Mahīpāla and other inquirers, during his residence at the shrine of Ochāyana, in the neighbourhood of a celebrated caverṅ of Magadha. Then visiting the sanctuary[2] of Muñjashi in Orisa, he presented to king Virācārya of that country a commentary of the Tantrik work called in Tibetan Pal-chog-dang-po (དཔལ་མཆོག་དང་པོ) The first noble Supreme One (p. 115).

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[1] Vajra-dhātu, in Tibetan: *R*dorje*h*i ḏvyiñs (རྡོ་རྗེའི་དབྱིངས) is the ideal absolute, the unchangeable One. This conception of the Supreme Being in the Buddhist Tantrikism is similar to that of the Brahma in Hinduism.

[2] This sanctuary was founded by one of the early kings of Orisa, named Muñjashi, who had become a convert to Buddhism It became known after him.

34. On the Kāla Cakra system of Buddhism which originated in Orisa.

By *Rai* Sarat Chandra Das, *Bahadur*, C.I.E.

In the *Sūtra* of Great Renunciation [Abhiniṣkramaṇa མངོན་འབྱུང་མདོ] the following account of the Buddha's delivering the Kāla Cakra Mūla Tantra at Çrīdhānya Kaṭaka occurs:—In the beginning of the twelfth month after his attaining to the state of perfect purification (*i.e.* Buddhahood), in the new moon of the year (*Water-Sheep*), the Buddha delivered the Kāla Cakra Mūla Tantra, comprising twelve thousand *çloka*, in the *Caitya* (temple) of Çrīdhānya Kaṭaka, near Çrī parvata great hill, at the request of king Candra Bhadra, the son of Devī Surya Prabhā [who was an incarnation of Vignāntaka] of the city of Kalāpa, in the country of Çambala and others. In that year were also delivered most of the Cakrajvāla Prajñāpāramita, etc.

སངས་རྒྱས་པ་ནས་བཟུང་ཟླ་ངོ་བཅུ་གཉིས་སོང་བའི་རྗེས་མ་ཆུ་ལུག
གི་ནག་ཟླའི་ཉ་ནས་དཔལ་གི་རི་ དང་ཉེ་བའི་འབྲས་སྤུངས་ཀྱི་མཆོད་རྟེན་དུ་
ཤམ་བྷ་ལའི་ཡུལ་ཀ་ལཱ་པའི་གྲོང་གི་ལྷ་མོ་ཉི་མའི་འོད་ཅེས་པ་བགེགས་
མཐར་བྱེད་ཀྱི་སྤྲུལ་པ་དེ་ཉིད་ཀྱི་སྲས་རྒྱལ་པོ་ཟླ་བ་བཟང་པོ་སོགས་ལ་ཀཱ་
ལ་ཙ་ཀྲའི་རྣམ་པར་བཞེངས་ནས་དུས་འཁོར་རྩ་རྒྱུད་ ཤོ་ལོ་ཀ་སྟོང་ཕྲག་
བཅུ་གཉིས་པ་སོགས་གསུངས་ཤིང་ལོ་དེར་འཁོར་ལོ་འབར་བ་ཤེར་ཕྱིན་
ཕལ་ཆེར་ཡང་གསུངས་པ། Pag-sam Jonzañ, p. 37.

In this Tantra of twelve thousand *çloka*, the following lines describe the origin of the Mahāyāna scriptures: first on the great Gṛidhra Kûta Parvata (Vuture-peaked hill) Buddha propounded Prajñapāramitā and the Anuttara Mahāyāna form of his doctrine to the *Bodhisattvas*. From there he proceeded to the great Caitya of Çrīdhānya Kaṭaka, and, sitting in concentration (རྩེ་གཅིག་ཏུ mystic spiritual) circle called Dharma Dhāta Maṇḍala, in the full moon of mid-spring, the Holy One first delivered the noble Tantra,

བྱ་རྒོད་ཕུང་པོའི་རི་ཆེན་པོར། ཐེག་པ་ཆེན་པ་བླ་ན་མེད།
ཤེས་རབ་ཕ་རོལ་ཕྱིན་པའི་ཚུལ། བྱང་ཆུབ་སེམས་དཔའ་རྣམས་ལ་བསྟན།།
དེ་ནས་གཅིག་ཏུ་མཆོད་རྟེན་ཆེར། ཆོས་ཀྱི་དབྱིངས་ཀྱི་དཀྱིལ་འཁོར་དུ།
དམ་པ་དང་པོ་དཔལ་ལྡན་རྒྱུད། དཔྱིད་ཟླ་འབྲིང་པོའི་ཉ་ལ་གསུངས།།

With reference to Kāla Cakra Mûla Tantra and Çrī-dhānya Kaṭaka, the following extracts from a note in page 192 of Alexander Csoma de Körös's Tibetan-English grammar may be read with profit. There is no mention of this important Tantra in the ancient Buddhist works of India and in their Chinese translations, on account of which the Mahāyāna school of Buddhism of Tibet differs so greatly from that which obtains in China and Japan. It is very probable that it was introduced long after the time of the Chinese pilgrim Yuan Chuang. In his extensive travels all over India and Ceylon, that scholarly monk never made mention of Çridhānya Kaṭaka, although he paid visits to the sanctuaries of Orisa, and to Çrīparvata, the place of Nāgarjuna's ascetical meditation and death. That this was near Çrīdhānya Kaṭaka is made clear by the text quoted above. Regarding the Kāla Cakra Tantra, Csoma de Körös remarked :—

"This system in fact was first introduced into India towards the end of the tenth century and afterwards *viâ* Kashmir into Tibet. It is very curious that Atiça, who flourished in Magadha at the beginning of the 11th century, should also not have referred to the Kala Cakra Tantra in his extensive writings which are preserved in translation in the *S*tangyur collection of Tibet. It is, therefore, clear though it originated in Çrīdhānya Kaṭaka about the time he was born, it had not become known to the Buddhists of Magadha and Tibet of his time. It is stated that this system was introduced in India from Çambhala about the year 965 A.D."

Now, it is necessary to ascertain where this Çambhala was and if it can be identified with any place of modern India, or if we should go to seek it in regions outside of India. Csoma referring to it has, in one place, said : "Çambhala, a fabulous country or city, in the north beyond the Jaxartes," and, in another place, observed : "It would be interesting to ascertain how the doctrine taught at Cuttack in Orisa, was brought beyond the Jaxartes to Çambhala, or what reason the Buddhists had for inventing the story."

The Tibetan historians, who have written on this subject, invariably locate Çambhala in Chinese Tartary in the valley of the Jaxartes, which they identify with the river Sitā mentioned in Buddhist works. King Candra Bhadra, who was believed to have been an incarnation of *Bodhisattva* Vajra Pāṇi, in the volume attributed to him called Mûla Tantra, describes the country as follows: "Çambhala on the north of the river Sitā[1] which was in area five hundred *yojana*, was skirted by snowy mountains, all round. It was shaped like a lotus with eight petals. In its centre stood the capital city called Kalāpa, to the south of which extended the forest of Malaya. P. 38, Pagsam Jonzañ.

ཆུ་བོ་སི་ཏའི་བྱང་གི་ཤམ་བྷ་ལ་ཞེས་བྱ་བ་ཀླུམ་ཕད་དུ་དཔག་ཚད་ལྔ་
བརྒྱ་ཡོད་པའི་མཐར་གངས་རིས་བསྐོར་བའི་ནང་པད་མ་འདབ་བརྒྱད་ཀྱི་
དབྱིབས་ཅན་དབུས་ཀྱི་ཀ་ལཱ་པའི་གྲོང་གི་ལྷོ་དི་མ་ལ་ཡའི་ནགས་ཚལ།།

Referring to the Kāla Cakra system of Buddhist *Tantra*, Alexander Csoma de Kŏrös, in page 192 of his Tibetan grammar, in 1834, wrote as follows:—

"The Kāla Cakra doctrine of Ādi Buddha was delivered by Çākya, in his 80th year, at Çrīdhānya Kaṭaka (Cuttack in Orisa), called in Tibetan (D̲pal-l̲dan ḫbras-s̲puñs̲) the noble city of accumulated rice. Upon the request of Candra Bhadra, king of Çambhala, who, in his 99th year, visited Çākya then, in a miraculous manner upon his return home, compiled in the course of the next year the Mûla Tantra in accordance with what he had heard from Çākya, and two years afterwards he died. In the Mûla Tantra, Çākya foretells that after 600 years from that date Kûlika Kirtti, 'the celebrated noble one,' will succeed to the throne of Çambhala, and that 800 years afterwards the Mleccha, or Mahammadan religion, will rise at Makha (Mecca)." Page 192, Tibetan Grammar by Csoma de Körös.

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[1] It may be noted here that in page 74 of Pagsam Jonzañ the author states that the lower part of Sitā is Lohita, *i.e.*, the great river of Tibet called Tsangpo. Sitā is the white river of Higher Asia—the Jaxartes. The Brahmaputra in upper Assam is the Lohita or the red river. So he confuses the Jaxartes with the Tsangpo of Tibet.

35. Notes from the Chemical Laboratory of the Presidency College. Note No. 5.—Reactions at Low Temperatures. Part I. Aliphatic Iodochlorides.

By Bidhu Bhushan Dutta, M.A.,

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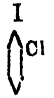
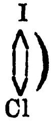
When chlorine is led through a chloroform solution of phenyl iodide at the ordinary temperature, two isomeric chloro-iodo-benzenes ( and ) are formed. If the phenyl iodide solution be, however, cooled by immersing it in iced water, phenyl iodochloride ($C_6H_5I<\substack{Cl\\Cl}$) is formed. The latter reaction is an additive one, while the former is substitutive. The change in the course of reaction with the change in temperature might be explained by assuming that the phenyl iodochloride is also formed in the case of the higher temperature, but it instantly decomposes with the liberation of hydrochloric acid and formation of the chloro-iodo-benzenes.

One might expect similar reactions to occur in the case of the aliphatic iodides, for in these reactions the peculiar ring structure of the aromatic compounds does not particularly come into play. The reaction, in this case, however, is apparently dissimilar; for, when chlorine is passed through ethyl iodide cooled to 0°, instead of the expected iodochloride, we get only a liberation of iodine. In the light of Nef's addition theory, the liberation of iodine might be explained as due to a secondary reaction, ethyl-iodo-chloride being formed in the first instance, although it is incapable of anything but a temporary existence at the temperature of the experiment. It might be expected therefore that the aliphatic iodochlorides could be isolated at comparatively low temperatures.

The aliphatic iodide chosen for the experiment was amyl iodide, because it was thought that the weight of the hydrocarbon radicle might influence the stability of the iodochloride. In the case of the phenyl iodochloride, which is the most stable of these compounds, the weight of the phenyl group is 77, while the weight of the two chlorine atoms amounts to 71, so that these two approximately equal weights might be expected to balance each other. The amyl group (C_5H_{11}) weighs 71, so that it is the nearest approximation to the phenyl group, although the peculiar stability due to the compact nature of the ring structure could not be imparted to it.

For want of a better source of cold, the amyl iodide was cooled by a freezing mixture composed of equal parts of crystallized calcium chloride and ice, which produced a temperature of about—30°C. Much iodine was liberated and traces of the formation of a yellow compound were apparent, although no sensible quantity could be collected. A slight alteration was then made in the experiment by allowing chlorine cooled by passing through a spiral tube surrounded by a freezing mixture to act upon a cold chloroform solution of anyl iodide, so that this time both the reacting substances were at about—30°C. There was no liberation of iodine, and a heavy yellow crystalline precipitate appeared at the bottom of the test tube in which the reaction was taking place. N-butyl, n-propyl and isopropyl iodides gave the same sorts of precipitates, ethyl and methyl iodides, however, giving rise only to liberation of iodine. The temperature for the formation of the iodochlorides of the lower alkyl iodides is evidently still lower. The iodochlorides of propyl, isopropyl, butyl and amyl iodides decomposed on being kept at the laboratory temperatures within about a quarter of an hour, with the formation of a reddish-brown liquid. The isopropyl iodochloride was analysed by heating in a sealed tube with nitric acid and silver nitrate, the mixed silver halides being converted into silver chloride by heating in a bulb-tube in a current of dry chlorine.

·3594 grammes of the substance gave ·788 grammes of the mixed silver halides which, on ignition in chlorine, was converted into ·6565 grammes of silver chloride.

Percentages found:—Cl = 30·9; I = 50·8.
" calculated (for $C_8H_7ICl_2$) Cl = 29·5; I = 52·7.

In this stage of the experiment, I came across Werner's paper on "Derivatives of polyvalent iodine," which appeared in the Journal of the Chemical Society for last November, and in which the author alludes to Thiele and Peter's paper published in the Berichte der Deutschen chemischen Gesellschaft for 1905,[1] under the title of "On some aliphatic iodo and iodoso chlorides," as a very interesting communication. In this paper, the authors describe the isolation of a number of aliphatic iodochlorides which were formed by allowing a solution of chlorine in a mixture of carbon tetrachloride and light petroleum to act upon the alkyl iodides cooled by a carbon dioxide and ether mixture. The methyl iodochloride is comparatively stable, melting with decomposition at—28°C, while the higher iodochlorides decompose at still lower temperatures, the sec-butyl iodochlorides being formed only in liquid air and decomposing above—100°C. On perusal of Werner's account of Thiele and Peter's work, as well as the abstract of their paper in the J.C.S., one gets the impression that all these compounds described by them are of the type $R - I<^{Cl}_{Cl}$. Indeed, Werner definitely says that the iodine atom in these compounds exists in a tervalent capacity.

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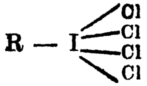
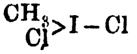
[1] pp 2842-45.

On consulting the original paper in the Berichte, it was found, however, that the authors only claim to have established the formula of $CH_3I<^{Cl}_{Cl}$ for methyl iodochloride, and that they did not even attempt to analyse and fix approximately a formula for the compounds obtained from the higher alkyl iodides. Taking all these facts into consideration, it seems most probable that the compounds obtained by Thiele and Peter from n-propyl, isopropyl and butyl iodides were of the higher type  $R - I(Cl)_4$ and this might explain their more unstable nature as well as their formation at a greater degree of cold than that used in the experiments described in the present paper. Stability of the iodochlorides would then increase with the increase in weight of the attached hydrocarbon radicals. The methyl compound $MeICl_4$ is on this view still not isolated, perhaps because it requires a greater degree of cold for its isolation.

Besides the greater degree of cold used there is another point of difference between the two methods of preparation, which might in part account for the production of compounds of different type. Thiele and Peter used a solution of chlorine in carbon tetrachloride and petroleum, whilst in the work described above dry chlorine gas was used. One might naturally expect the formation of different compounds by wet and dry methods.

These compounds decompose with the formation of the aliphatic chlorides and iodine chloride. This decomposition, as well as the reaction of these compounds with potassium iodide solution, shows that they are not at all substitution compounds. Analysis would fail to distinguish between compounds of the types $(C_n H_{2n+1}) I<^{Cl}_{Cl}$ and $C_nH_{2n-1} C_n H_{2n-1} Cl_2 I$; for the loss of the two hydrogen atoms would produce no appreciable decrease in weight. Werner suggests that these compounds might after all be molecular compounds of the aliphatic chlorides and iodine chloride. The unstable nature of these compounds renders a rigorous proof of their constitution difficult. The preparation of iodoso compounds ($R-I=O$) from these bodies would have settled the matter, but on treatment with caustic soda solution, the iodochlorides would decompose into alkyl chlorides as in the case of addition of water. When chlorine was passed into a cool chloroform solution of butyl chloride and iodine, no precipitate could be detected. Werner obtained some molecular compounds with ICl or ICl_3 but he did not attempt to obtain similar compounds with alkyl chlorides. If such compounds could be isolated, a comparison of the properties of these substances with these iodochlorides would at once settle the true character of the latter. The easy decomposability of these substances might be explained if we assume the same spatial formula for trivalent iodine as for trivalent nitrogen. Methyl iodo-chloride being in that case represented as  $\begin{matrix}CH_3\\Cl\end{matrix}\!>I-Cl$ it would easily pass into CH_3Cl and ICl. In the case of phenyl iodo chloride, the chlorine atom instead of displacing the phenyl group as a whole, perhaps on account of the firm bond between it and the iodine atom, combines with one of the more mobile hydrogen atoms, thereby producing chloro-iodobenzene.

By this work, Thiele and Peter have bridged, to some extent, the gulf separating two important classes of organic compounds (the aliphatic and the aromatic series). Any general view about a reaction, however small in its scope, is a welcome addition to our stock of knowledge, because these small links will ultimately lead to the higher generalisation which is yet to come for chemistry. This work is also suggestive in another respect, for from the isolation of these compounds at low temperatures, one is naturally led to consider the possible existence of a number of interesting unstable compounds, amongst which may be mentioned the diazo derivatives of the aliphatic amines. The isolation of these diazo compounds, if they exist at all, will, of course, be a matter of great difficulty, but it might be easy to get from the cool diazotised solution, the corresponding stable azo derivatives, as in the case of the aromatic amines. Attempts were made to prepare the azo compounds corresponding to methyl and ethyl amines by cooling a hydrochloric acid solution of the bases in calcium chloride and ice and adding to it drop by drop a strong solution of sodium nitrite and then adding a hydrochloric acid solution of dimethyl aniline or a caustic soda solution of β-naphthol. No trace of the formation of an azo dye could be observed. It is, however, just possible that with the higher aliphatic amines or with a better source of cold, the azo compounds of the fatty amines such as $CH_3N = NC_6H_4N(CH_3)_2$ $\{$ from $CH_3N = NCl$ $\}$ could be isolated.

It is said that a newer and simpler chemistry prevails in the case of reactions at high temperatures. This remark holds good in the case of low temperatures also, the only difference being that in the former case, the reactions are mainly dissociative on account of the violent molecular movements at high temperatures, while the low temperature reactions are, in general, additive, the quiescent character of the molecules favouring this sort of reaction.

A systematic examination of reactions at low temperatures would furnish us with a better idea about molecular mechanics. For a resident in the tropics, however, this is not an easy task as he is seriously handicapped by reason of the higher temperature.

In Europe where liquid carbon dioxide can be had at 1*s.* per lb. and liquid air can be prepared at not an exorbitant cost, reactions at low temperatures might even be of importance in chemical technology, as an instance of which may be mentioned the possibility of the preparation of azo dyes corresponding to fatty amines which has been suggested above.

36. Note on the absorption of gases, vapours, and substances in solution by solids and amorphous substances.

By MORRIS W. TRAVERS, D.Sc., F.R.S.,
Director of the Indian Institute of Science, Bangalore.

Under the heading which forms the title of this paper may be included the phenomena which underlie many of the problems which are at present engaging the attention of scientific workers in India. The absorption and retention of water in various materials is a subject which is naturally of particular interest in a country which presents such varied conditions of climate, and perhaps the elucidation of the general principles of the phenomena concerned may assist in the solution of some of the ecomomic questions which are now under investigation.

Amorphous and solid substances.

It is necessary for the purposes of the present discussion to make a distinction between true solids and amorphous substances. We recognise three states, or in modern language 'phases' of matter, the solid, the liquid, and the gaseous. When a liquid is cooled it will ultimately become changed into a crystalline substance, a solid, and at the transition point there will be a marked discontinuity in its properties; or as the temperature falls it will merely become more viscous, and will at length become to all appearances a solid, without however exhibiting any discontinuity whatsoever in its properties. Amorphous substances such as glass, which are formed in this manner, are really in the 'liquid phase,' and are only solids in the popular sense. They always exhibit a tendency to pass into the more stable 'solid phase,' though the change often takes place with excessive slowness. An example of this is to be found in the glass of old church windows in England which sometimes begins to crumble; and when once the decay sets in it cannot be arrested.

There is another manner in which amorphous substances may be formed. When a substance separates from solution it is the most unstable form which is first produced. Thus, calcium carbonate is precipitated from a mixture of solutions of calcium chloride and ammonium carbonate in the form of liquid, or at least amorphous, globules, which rapidly become crystalline. Highly complex organic substances, when precipitated in this manner, often retain their amorphous character, and do not become crystalline. Such is the character and mode of formation of the fibrous material of plants.

General character of the phenomena of absorption.

We may consider the absorption of vapours by solid or amorphous substances to be due to one of three causes:—

(*a*) Chemical action.
(*b*) Surface condensation or capillary action.
(*c*) Solution.

Cases involving chemical action hardly come within the sphere of the discussion, unless, as possibly may be the case, the absorption of water by soils is in any degree due to the presence of hydrates of such substances as alumina. The influence of chemical affinity would in any case be very slight.

As to whether the absorption of water by cotton, etc., or of gases by other amorphous substances, such as charcoal, is due to solution or to surface condensation, has been the subject of a discussion between Professor Trouton, of University College, London, and myself. I am in favour of attributing it to solution, and for the following reasons. We are concerned with systems which consist of a gas or vapour and an amorphous substance, which as we have seen is physically a liquid, though it possesses rigidity, and is therefore capable of forming solutions, as are ordinary liquids. It is true that crystalline solids are capable of forming homogeneous mixtures, which Van t'Hoff has termed 'solid solutions'; but the constituents of such solutions must necessarily be isomorphous, and hence the possibility of forming them is limited. The fact that amorphous substances, such as gut, undergo a change of form and volume when they absorb water, is distinctly in favour of the solution theory.

For my first investigation on the nature of absorption I selected the simple case of carbon dioxide and charcoal, and as no very

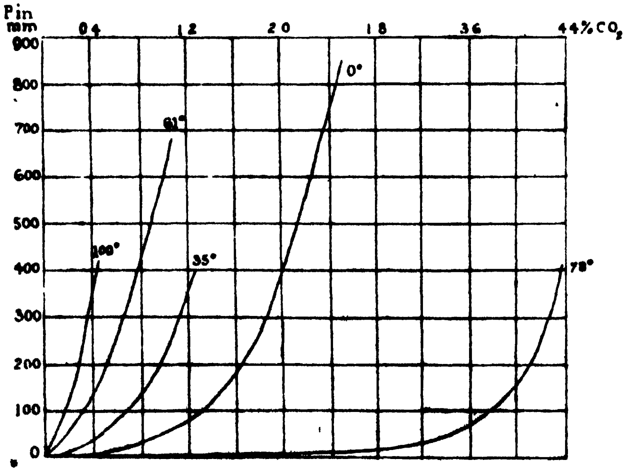


FIG. 1 —Absorption of carbon dioxide by charcoal.

exact determinations of the relationship between the pressure and the quantity of gas absorbed had been made, I was obliged to make some measurements for myself. The details of these experiments will be found in the "Proceedings" of the Royal Society, Vol. 78, A.

The relationship between pressure and 'concentration,' the latter expressed as the quantity of carbon dioxide *per cent.* absorbed by the charcoal, at 100°, 61°, 35°, 0°, and −78° C. are represented by the curves in Fig. 1. The equation for these curves may conveniently be written in the form

$$\sqrt[n]{p}/x = \text{Constant},$$

where p is the pressure of the gas, and x is the concentration. The value of n increases as the temperature falls, and tends towards unity at moderately high temperatures, when the expression becomes

$$p/x = \text{Constant}.$$

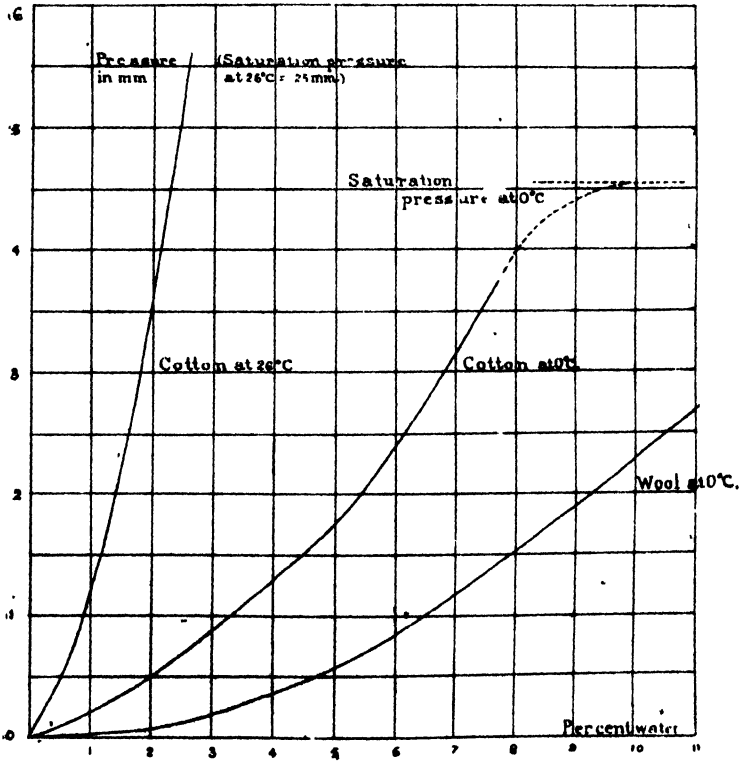


FIG. 2.—Absorption of water by cotton and wool.

This is of course Henry's Law for the solution of a gas in a liquid. It is possible to put forward several different suggestions as to why the equilibrium curves are logarithmic at the lower temperatures, but none of them appear to be adequate.

Though in the case of a substance such as charcoal, which may be considered as homogeneous, the simple exponential law holds, it is not to be expected that it will be directly applicable to such systems as cotton, wool, etc., in contact with water vapour. Such materials as vegetable fibres cannot be considered as homogeneous, and are probably built up of several amorphous substances.

In the course of last summer I carried out some experiments on the absorption of water vapour by cotton and wool at 0°C., and the results, which have been submitted to the Royal Society, are represented by the curves in Fig. 2. It will be observed that they are of the same form as those representing the equilibrium between carbon dioxide and charcoal, but they are not represented equally well by the simple exponential formula. The equilibrium curve for cotton at 26°C. was determined for low pressures only, and it will be observed that it is more nearly linear than the curve for 0°C. On extrapolation we find that while at 0° cotton can take up 8 per cent. of its weight without becoming saturated, at 26° it can only take up about 4 per cent. of moisture.

It will be observed that wool is more susceptible to changes of humidity than is cotton, and herein lies the advantage of employing it as a material for clothing. A quantitative study of the behaviour of fibres, timbers, cork, etc., towards water, will indicate their suitability for many purposes to which they are applied. A considerable amount of discussion has recently arisen over the question of moisture in jute, and perhaps my results may be of assistance to those who are engaged in the investigation of the problem.

The absorption of water by crystalline materials, such as the components of the soil, is in all probability of a totally different character. The greater part of the water present in the soil is probably present as 'free water,' and the pressure of the vapour in contact with it is probably only lower than the saturation pressure in proportion to the quantity of soluble matter present. This problem awaits solution.

The absorption of substances from solution by solids and amorphous substances.

The distribution of soluble dyes, salts, etc., between the bath and such amorphous materials as plant fibres, follows the logarithmic law of distribution, and this may be taken as evidence that neutral dyes are present in the fibre in a state of solution. This is sufficient to explain why cotton does not dye with indigo as effectively as wool; it is probably an inferior solvent for indigo white, just as it is an inferior solvent for water (see Fig. 2). Data with regard to absorption will be found in the following papers:—G. C. Schmidt, *Chem. Soc. Abs.* 1895, A. ii., 39; J. Walker, *Chem. Soc. Trans.* 1896, 1334; P. D. Zacharias, *Chem. Soc. Trans.* 1902, ii., 249, i., 635, 725.

The absorption curves resemble those shown in Plate I, the ordinates representing the concentration of the dye in the solution, and the abcissæ the concentration in the fibre. When the value of *n* in the expression, which may be written—

$$\sqrt[n]{(\text{Concentration in soln.})} / (\text{Concentration in fibre}) = \text{Constant},$$

is large, and the curve resembles the one on the left hand of the plate, an interesting condition is arrived at. The fibre or other amorphous substance appears to take up the whole of the soluble material in the bath till a certain concentration is arrived at. Increase in the concentration in the bath above this limit does not appear to be accompanied by marked increase in the quantity of soluble matter absorbed. That this should be so is evident from the form of the curves.

As far as we know it is not possible to colour crystalline substances, except by depositing colouring matter on the surface of the crystals; they cannot be dyed in the true sense of the word, though isomorphous mixtures of coloured and colourless substances may be formed by crystallising mixed solutions.

[My attention has been called to a paper by Masson and Richards 'On the Hygroscopic Action of Cotton,' which appeared in the number of the "Proceedings" of the Royal Society published on December 20th (Vol. 78, p. 412). The experimental results obtained by these authors resemble my own, but they are obtained as the mean between the values for the quantities of moisture absorbed by dry cotton under certain conditions of temperature and saturation of the atmosphere, and for the quantities retained by moist cotton under similar conditions. The method is by no means accurate when applied to the measurement of small vapour pressures, and it may be for this reason that my results do not confirm the authors' conclusions as to the variation of pressure with temperature at constant saturation (p. 426, § 2).

The authors confine their attention to the case of the absorption of moisture by cotton, and in a postscript discussing Trouton's experiments they point out that 'the pure surface theory . . . is inconsistent with the facts,' but that it appears more probable that 'the film of moisture does (until equilibrium is reached) penetrate and form a species of solution.'

This was the conclusion at which I arrived when the experiments referred to in my paper were completed, and I expressed my views in a paper read before the Sanitary Congress last summer. The object of the present paper is to call attention to the fundamental principles which underlie the phenomenon of absorption, and to the distinction which must be drawn between 'solid solutions' and solutions which are formed by amorphous substances.]

37. Indian Logic as preserved in Tibet, No. 2.

By Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa,
M.A., M.R.A.S.

This paper, which is compiled from a volume of the Tibetan Tangyur borrowed from the India Office, London, through the kindness of Mr. F. W. Thomas, contains a short account of 29 Indian Buddhist works on Logic, the Sanskrit originals of which have been lost to India. Most of them were composed in Kaśmīra and Nepal between 600 A.D., and 1200 A.D., and were translated into Tibetan mainly during the Śakya hierarchy in the 13th century A.D.

1. Sambandha-parīkṣā-ṭīkā, འབྲེལ་པ་བརྟག་པའི་རྒྱ་ཆེར་བཤད་པ—A copious explanation of the examination of connection.

It extends over leaves 1*a*—24*b* of the Tangyur, ṃdo, ze. The work, which was composed by the teacher Vinītadeva (དུལ་བའི་ལྷ), opens thus:—

"Who is entirely unconnected with the world and is yet designated as the supreme teacher of it—to him bowing down fully I explain the Sambandhaparīkṣā."[1]

It was translated into Tibetan by the Indian sage Jñānagarbha and the Tibetan interpreter Vande-nam-ṃkhas. The translators begin the Tibetan version with a salutation to Mañjuśrī-kumārabhūta (འཇམ་དཔལ་གཞོན་ནུར་གྱུར་པ)།

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[1] འགྲོ་བ་ཐམས་ཅད་འབྲེལ་མེད་པར།།
འགྲོ་བའི་བླ་མ་གང་གསུང་བ།།
དེ་ལ་རབ་ཏུ་ཕྱག་འཚལ་ནས།།
འབྲེལ་པ་བརྟག་པ་བཤད་པར་བྱ།། (Tangyur, ṃdo, ze leaf 1.)

2. Sambandha-parīkṣānusāra, འབྲེལ་པ་བརྟག་པའི་རྗེས་སུ་འབྲང་བ —A pursuit after the examination of connection.

It extends over leaves 24*b*—39*a* of the Tangyur, ṃdo, ze. The work, which was composed by Brāhmaṇa S'aṅkarānanda (བྲམ་ཟེ་བདེ་བྱེད་དགའ་བ), opens thus :—

"By whom connection with the world has been renounced, in whom there are no "I" and "mine," who is called free from concerns—to that Omniscient One I bow down." [1]

The work was translated into Tibetan by the great Indian Paṇḍit Parahita and the Tibetan interpreter-monk D̲gaḥ-waḥ̲i-ṟdo-rje. The translators begin the Tibetan version with a salutation to Mañjuśrī-kumārabhūta.

3. Vāda-nyāya-vyākhyā, རྩོད་པའི་རིགས་པའི་འགྲེལ་པ — A commentary on logical discussion.

It extends over leaves 39*b*—65*b* of the Tangyur, ṃdo, ze. The work, which was composed by Vinīta-deva (དུལ་བ་ལྷ), opens thus :—

"Who is self-perfected in sweet logical discussion, supreme in patience, affection, charity and self-restraint, and has become the most excellent of logicians—to him bowing down I compose a commentary on the text of Vāda-nyāya." [2]

[1] གང་གིས་འབྲེལ་བ་སྤངས་གྱུར་པ།།
འགྲོ་བ་བདག་དང་བདག་གི་མི།།
གཟུང་འཛིན་མེད་པ་ཅན་གསུངས་པ།།
ཀུན་མཁྱེན་དེ་ལ་ཕྱག་འཚལ་ལོ།། (Tangyur, ṃdo, ze, leaf 24*b*.)

[2] གང་དག་རིགས་པའི་རྩོད་པ་སྙན་པར་རང་གྲུབ་པའི།།
བཟོད་དང་སྙིང་བརྩེ་སྦྱིན་དང་དུལ་བར་རབ་ལྡན་པའི།།

The Tibetan version begins with a salutation to the lord of speech (གསུང་གི་མངའ་བདག) and to the speaker of the excellent truth (དོན་དམ་པ་གསུང་བ) ।

4. Vāda-nyāya-vipañcitārtha, རྩོད་པའི་རིགས་པའི་འགྲེལ་པ་དོན་རྣམ་པར་འབྱེད་པ—A complete unfolding of the meaning of the commentary on logical discussion.

It extends over leaves 65*b*—186*a* of the Tangyur, mdo, ze. The work, which was composed by the great teacher S'ānta-rakṣita, opens thus:—

"Who having constantly dispersed darkness by the ray of the heap of various pure precious qualities, exerted himself for the sake of obtaining the fruits of desire of various sentient beings and rejoiced to do good to the entire world—to that Mañjuśrī, bowing down in reverence, I begin to compose this concise and stainless Vāda-nyāya-vipañcitārtha."[1]

རིགས་པ་མཁྱེན་པའི་མཆོག་གྱུར་དེ་ལ་ཕྱག་འཚལ་ནས།།
རྩོད་པའི་རིགས་པ་གཞུང་བཞིན་དུ་ནི་བཤད་པར་བྱ།།

(Tangyur, mdo, ze, leaf 39*b*)

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[1] སྣ་ཚོགས་ཡོན་དྭན་དམ་པ་རིན་ཆེན་ཕུང་པོ་འི་འོད་ཀྱིས་རྟག་ཏུ
མུན་པ་བཅོམ་གྱུར་ཅིང་།།
གང་ཞིག་རྣམ་པ་སྣ་ཚོགས་སེམས་ཅན་འདོད་པའི་འབྲས་བུ
ཐོབ་པའི་དོན་དུ་བརྩོན་གྱུར་པ།།
མ་ལུས་འགྲོ་ལ་ཕན་པ་བསྐྱེད་པར་དགྱེས་པ་འཇམ་དཔལ་དེ་ལ
གུས་པར་ཕྱག་འཚལ་ནས།།
རྩོད་པའི་རིགས་པ་རྣམ་པར་འབྱེད་པ་དྲི་མ་དང་བྲལ་མདོར
བསྡུས་པ་འདི་བརྩམ་པར་བྱ།།

(Tangyur, mdo, ze, leaf 65*b*.)

The work was translated into Tibetan by the Indian sage Kumāra-śri-bhadra and the Tibetan interpreter-monk venerable S'eṣ-rab and H̱bro-sen-ḏkar (who was a native of the province of H̱bro or Dö) in the holy monastery of Ḇsam-yaṣ (Samye). The translators begin the Tibetan version with a salutation to Mañjuśri-kumārabhūta.

5. Ālambana-parikṣā-ṭikā, དམིགས་པ་བརྟག་པའི་འགྲེལ་བཤད —Annotation on the examination of the objects of knowledge.

It extends over leaves 186*b*—200*b* of the Tangyur, m̱do, ze. The work, which was composed by the teacher Vinita-deva (དུལ་བ་ལྷ), opens thus.—

"Meditating on the merciful Omniscient One, and saluting him by my head, I compose the Ālambana-parikṣā-ṭikā."[1]

It ends thus:—

"Here is finished the Ālambana-parikṣā-ṭikā, which is a clean work of the teacher named Vinita-deva who weighed all sorts of ālambana and is a lion of speakers, confounding the brains of the Tirthika-elephants."[2]

The work was translated into Tibetan by the Indian sage S'ākya-siṁha and the Tibetan interpreter Vande-ḏpal-ḇrtsegs̱ of Shu-chen. The translators begin the Tibetan version with a salutation to Buddha (སངས་རྒྱས) and all Bodhisattvas (བྱང་ཆུབ་སེམས་དཔའ)|

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[1] ཐུགས་རྗེས་ཟིན་པའི་དགོངས་པ་ཅན།།
ཐམས་ཅད་མཁྱེན་པའི་སྤྱི་བོ་ཡིས།།
ཕྱག་འཚལ་དམིགས་པ་བརྟག་པ་ཡི།།
རྣམ་པར་བཤད་པ་རབ་ཏུ་བྱ།། (Tangyur, m̱do, ze, leaf 186*b*.)

[2] དམིགས་པ་བརྟག་པ་རྒྱ་ཆེར་བཤད་པ་སློབ་དཔོན་དུལ་བ་ལྷ་ཞེས་བྱ་བའི་དམིགས་པ་མཐའ་དག་ལ་གཞལ་བ་སྨྲ་བའི་སེང་གེ་མུ་སྟེགས་ཅན་གླང་པོ་ཆེའི་ཀླད་པ་འགེམས་པར་མཛད་པས་སྦྱང་བ་རྫོགས་སོ།།

(Tangyur, m̱do, ze, leaf 200*b*)

6. Nyāya-āloka-siddhi, རིགས་པ་གྲུབ་པའི་སྒྲོན་མ —A lamp of logical demonstration.

The work, which extends over leaves 200*b*—201*b* of the Tangyur, mdo, ze, was composed by the teacher Candra-gomi. It was translated into Tibetan by Pandit S'rī-Sitaprabha and the interpreter-monk Vairocana. The translators begin the Tibetan version with a salutation to Mañjuśrī (འཇམ་དཔལ)།

7. Sarvajña-siddhi-kārikā, ཐམས་ཅད་མཁྱེན་པ་གྲུབ་པའི་ཚིག་ལེའུར་བྱས་པ —Memorial verses on the accomplishment of omniscience.

The work, which extends over leaves 201*b*—202*b* of the Tangyur, mdo, ze, was composed by Vāg-gupta (ངག་སྦྲངས)། The Tibetan version begins with a salutation to the Omniscient One (ཐམས་ཅད་མཁྱེན་པ)།

8. Vāhyārtha-siddhi-kārikā, ཕྱི་རོལ་གྱི་དོན་གྲུབ་པ་ཞེས་བྱ་བའི་ཚིག་ལེའུར —Memorial verses on the reality of external things.

It extends over leaves 202*b*—210*a* of the Tangyur, mdo, ze. The work, which was composed by the teacher Kuśala-rakṣita (དགེ་སྲུངས), opens thus:—

"Who while serving his own object accomplished the entire objects of others, to him bowing down, I, for the sake of accomplishing all objects, investigate into objects (external)."[1]

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[1] གང་གིས་རང་དོན་བསྟེན་གྱུར་ནས།།
གཞན་དོན་མ་ལུས་རྣམ་ཀུན་མཛད།།
དེ་ལ་དོན་ཀུན་གྲུབ་བྱའི་ཕྱིར།།
ཕྱག་འཚལ་ནས་ནི་དོན་དཔྱད་དོ།།

(Tangyur, mdo, ze, leaf, 202b.)

The work was translated into Tibetan by the Vaibhāṣika (བྱེ་བྲག་ཏུ་སྨྲ་བའི) teacher Jina-mitra of Kāśmira and the Tibetan interpreter-monk D̲pal-b̲rtsegs-rakṣita. The Tibetan version begins with a salutation to all the Tathāgatas (དེ་བཞིན་གཤེགས་པ) of three times.

9. Śruti-parīkṣā-kārikā, ཐོས་ པ་ བརྟག་ པའི་ཚིག་ ལེའུར་ བྱས་པ —Memorial verses on the examination of hearing (that is, the Word).

The work, which extends over leaves 210*a*—211*a* of the Tangyur, m̲ds, ze, was composed by the teacher Kuśala-rakṣita (དགེ་སྲུངས)། The Tibetan version begins with a salutation to the Omniscient One (ཐམས་ཅད་མཁྱེན་པ)།

10. Anyāpoha-vicāra-kārikā, གཞན་ ལ་ བརྟག་ པའི་ཚིག་ ལེའུར་བྱས་པ — Memorial verses on the determination of a thing by the exclusion of its opposites.

The work, which extends over leaves 211*a*—213*b* of the Tangyur, m̲do, ze, was composed by the teacher Kuśala-rakṣita (དགེ་སྲུངས)། The Tibetan version begins with a salutation to the Omniscient One (ཐམས་ཅད་མཁྱེན་པ)།

11. Īśvara-bhaṅga-kārikā, དབང་ཕྱུག་འཇིག་པའི་ཚིག་ལེའུར་བྱས་པ —Memorial verses on the refutation of God.

It extends over leaves 214*a*—215*a* of the Tangyur, m̲do, ze. The work, which was composed by the teacher Kuśala-rakṣita (དགེ་སྲུངས), opens thus:—

"Who completely knowing (things) explained them to sentient beings—to that lord of the world (Buddha) bowing down I bring this out fully."[1]

The Tibetan version begins with a salutation to the Omniscient One (ཐམས་ཅད་མཁྱེན་པ)།

12. Pramāṇa-parīkṣā, ཚད་མ་བརྟག་པ—An examination of the means of knowledge.

It extends over leaves 215*a*—237*b* of the Tangyur, mdo, ze. The work, which was composed by the teacher Dharmottara (ཆོས་མཆོག), opens thus:—

"It is a very strange thing that the unlearned men, though their eyes are opened, do, in consequence of their own nature, turn away from Pramāṇa (the means of knowledge), and the learned ones owing to mistakes (or delusions) not acquiring it, suffer various miseries; who having clearly explained it has made the entire world to strive after and acquire the same—to that expounder of Pramāṇa, the Sugata, bowing down, I explain Pramāṇa."[2]

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[1] གང་གིས་ཡང་དག་མཁྱེན་གྱུར་ཅིང་ ||
སེམས་ཅན་རྣམས་ལ་སྟོན་བྱེད་པ ||
འགྲོ་མགོན་དེ་ལ་ཕྱག་འཚལ་ཏེ ||
ཡང་དག་གདན་ལ་དབབ་པར་བྱ ||
(Tangyur, mdo, ze, leaf 214*a*.)

[2] ཐ་མལ་མ་ཡིན་མིག་གྲུབ་པས་ཀྱང་རིགས་མིན་དེ་ཡི་རང་བཞིན་
ལས་ལྡོགས་པ ||
རིག་པ་དང་ལྡན་འཁྲུལ་པ་རྣམས་ཀྱིས་མི་ཐོབ་སྣ་ཚོགས་སྡུག་
བསྔལ་ཟད་པ་ནི ||
གང་གིས་འགྲོ་བ་མ་ལུས་གསལ་བར་བསྟན་ནས་དོན་དུ་གཉེར་
བས་ཐོབ་མཛོད་པ ||

The work was translated into Tibetan by the monk B̲lo-ḻdan-śeṣ-rab. The Tibetan version begins with a salutation to the Omniscient One.

13. Pramāṇa-parīkṣā, ཚད་མ་བརྟག་པ —An examination of the means of knowledge.

It extends over leaves 238*a*—253*b* of the Tangyur, m̲do, ze. The work, which was composed by the teacher Dharmottara, opens thus:—

"Who is not knowable to the (worldly) great, who occupies the position of the pacifier of the links of miseries, who is to be obtained (perceived) by multitudes of reverential prayers—to that Pramāṇa personified (Buddha) I fully bow down."[1]

The work was translated into Tibetan by the interpreter-monk B̲lo-ḻdan-śeṣ-rab. The Tibetan version begins with a salutation to the Omniscient One.

14. Apoha-nāma-prakaraṇa, གཞན་སེལ་བ་ཞེས་བྱ་བའི་རབ་ཏུ་བྱེད་པ—A treatise named the exclusion of the opposites.

It extends over leaves 254*a*—266*a* of the Tangyur, m̲do, ze. The work, which was composed by the teacher Dharmottara (ཆོས་མཆོག), opens thus:—

"The character of whose reflective mind is glorified in solitude by others, who has promulgated the incomprehensible, intrin-

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ཚད་མ་རབ་བརྗོད་བདེ་གཤེགས་དེ་ལ་ཕྱག་འཚལ་ནས་ནི་ཚད་
མ་རབ་བཤད་བྱ॥

(Tangyur, m̲do, ze, leaf 215*a*.)

[1] གང་གི་ཆེ་བ་རྣམས་ཀྱི་ཤེས་པར་མ་གྱུར་པ॥
སྡུག་བསྔལ་བརྒྱུད་པ་ཞི་བའི་གོ་འཕང་ཆེན་པོ་ནི॥
རབ་ཏུ་བསྙེན་ནས་དོན་གཉེར་ཚོགས་ཀྱིས་ཐོབ་མཛད་པའི॥
ཚད་མར་གྱུར་པ་དེ་ལ་བདག་ནི་རབ་ཏུ་འདུད॥

(Tangyur, m̲do, ze, leaf 238*a*.)

sic truth not shrouded by doubts, who is called the preacher of truth to the world, the perfectly victorious lord and one entirely free from faults—him saluting with my head I explain here *Apoha* (the doctrine of exclusion of the opposites)."[1]

"The work was translated into Tibetan by the Kāśmīrian Paṇḍit Bhāgya-rāja (སྐལ་ལྡན་རྒྱལ་པོ) and the interpreter-monk B̲lo-l̲dan-śeṣ-rab, in the incomparable city of Kāśmīra. The translators begin the Tibetan version with a salutation to Mañjuśrī-kumārabhūta.

15. Pāra-loka-siddhi, འཇིག་རྟེན་ཕ་རོལ་གྲུབ་པ—Existence of the world beyond.

It extends over leaves 266*a*—270*a* of the Tangyur, m̱do, ze. The work, which was composed by the teacher Dharmottara, begins: "Some say that the world beyond is possessed of the characteristics of a complete separation from the link of consciousness which began from before birth and continued after death, etc."[2]

[1] རྟག་བཅས་བློ་ཡི་གང་གི་རང་བཞིན་གཞན་གྱིས་དབེན་པར་
རབ་བསྟད་པ།།
བློ་མིན་ཕྱི་མིན་དེ་ཉིད་མ་ཡིན་བློ་བཏགས་གང་ཉིད་བརྗོད་པ
ཡིས།།
འགྲོ་ལ་དེ་ཉིད་གསུངས་པ་རྣམ་རྒྱལ་མངའ་པ་མ་ལུས་སྐྱོན
བྲལ་པ།།
གསུང་མཛད་གང་ཡིན་དེ་ལ་མགོས་ཕྱག་འཚལ་ནས་སེལ་བ
དེ་འདིར་བཤད།།

(Tangyur, m̱do, ze, leaf 254*a*.)

[2] ཁ་ཅིག་ནི་སྐྱེ་བའི་སྔ་རོལ་འཆི་བའི་འོག་རོལ་དུ་རྣམ་པར་ཤེས་པ་རྒྱུན
རྣམ་པར་འཆད་པའི་མཚན་ཉིད་ཅན་འཇིག་རྟེན་ཕ་རོལ་དུ་སྨྲོ ... །།

(Tangyur, m̱do, ze, leaf 266*a*.)

The work was translated into Tibetan by the great Kāśmīrian Paṇḍit Bhāgya-rāja (སྐལ་ལྡན་རྒྱལ་པོ) and the Tibetan interpreter-monk Tshab-ñi-ma-grags during the life-time of Śrī-Harṣadeva (ཤྲཱི་ཧ་རི་ཥ་དེ་བ), King of Kāśmīra [A.D. 1089–1101, *vide* Dr. Stein's Rājataraṅgiṇī, Vol. I, pp. 333–401], in the monastery of Ratna-raśmi (Gem-lustre) at the centre of the incomparable great city.

The translators begin the Tibetan version with a salutation to Mañjuśrī-kumārabhūta.

16. Pustaka-pāṭhopāya, གླེགས་བམ་བཀླག་པའི་ཐབས—The method of reading a book.

The work, which consists of the leaf 270*a*—270*b* of the Tangyur, ṃdo, ze, was composed by Paṇḍit Dānaśrīla, and was translated into Tibetan by himself. The work begins with a salutation to the Triple Gem (དཀོན་མཆོག་གསུམ)།

17. Kṣaṇa-bhaṅga-siddhi, སྐད་ཅིག་མ་འཇིག་པ་གྲུབ་པ—Establishment (of the doctrine) of momentary destruction.

The work, which extends over leaves 270*b*—282*a* of the Tangyur, ṃdo, ze, was composed by the teacher Dharmottara. It was translated into Tibetan by the Indian sage Bhāgya-rāja, and the interpreter-monk Blo-ldan-śes-rab. The translators begin the Tibetan version with a salutation to Mañjuśrī-kumārabhūta.

18. Kṣaṇa-bhaṅga-siddhi-vyākhyā, སྐད་ཅིག་མ་འཇིག་པ་གྲུབ་པའི་རྣམ་འགྲེལ—Commentary on the treatise named "the establishment of the doctrine of momentary destruction."

The work, which extends over leaves 282*a*—301*a* of the Tangyur, ṃdo, ze, was composed by the teacher Brahman Muktākumbha (མུ་ཏིག་བུམ་པ). It was translated into Tibetan by the Indian sage Vināyaka and the interpreter-monk Grags-hbyor-śes-rab. The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

19. Sahāvalambha-niścaya, ལྷན་ཅིག་དམིགས་པ་ངེས་པ—Ascertainment of concepts arising together.

It extends over leaves 301*a*—308*b* of the Tangyur, m̱do, ze. The work, which was composed by the best of disputants the teacher S'rī-prajñā-sambhava-Gupta (དཔལ་ཤེས་རབ་འབྱུང་གནས་སྦས་པ), opens thus:—

"Saluting Sugata, the bestower of heaven, the matchless pure substance, I copiously explain this Sahāvalambha-niścaya (ascertainment of concepts arising together)"[1]

It was translated into Tibetan by the Nepalese Paṇḍit S'āntibhadra and the Tibetan interpreter-monk S'ākya-ẖod of the village of Seṅ-ḏkar in the province of H̱bro (Dö). The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

20. Apohasiddhi, སེལ་བ་གྲུབ་པ—Establishment of the doctrine of determining a thing by the exclusion of its opposites.

It extends over leaves 308*b*—334*a* of the Tangyur, m̱do, ze. The work, which was composed by the pious devotee (དགེ་བསྙེན་དམ་པ) the great sage Brahman S'ankarānanda, opens thus :—

"The Omniscient One, free from all mistakes (illusions) and existing in three times (the past, present and future), who looks to things in their true nature, saluting him and relying on his mercy, I elucidate the puzzle of the discussion on "self" and "others" connected with the doctrine of *Apoha*."[2]

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[1] བདེ་གཤེགས་བདེ་འགྲོ་སྦྱིན་མཛད་པ ॥
གཉིས་མེད་གསལ་དངོས་ཕྱག་ནས ॥
ལྷན་ཅིག་དམིགས་པར་ངེས་པ་ནི ॥
འདི་ནི་རྒྱས་པར་བཤད་པར་བྱ ॥ (Tangyur, m̱do, ze, leaf 301*a*)

[2] ཀུན་མཁྱེན་འཁྲུལ་བྲལ་དུས་གསུམ་གནས་པ་ཡི ॥
དོན་རྣམས་ཇི་བཞིན་གཟིགས་པ་ལ་བདུད་དེ །

The work was translated into Tibetan by the Kāśmirian Paṇḍit Manoratha and the Tibetan interpreter Ḇlo-ḻdan-śeṣ-rab in the incomparable city of Kāśmira. The Tibetan version begins with a salutation to the Omniscient One (ཐམས་ཅད་མཁྱེན་པ) |

21. Pratibandha-siddhi, འབྲེལ་པ་གྲུབ་པ—Establishment of the causal connection.

It extends over leaves 334*a*—335*a* of the Tangyur, ṃdo, ze. The work, which was composed by the devout devotee (དགེ་བསྙེན་དམ་པ) S'aṅkarānanda, opens with a salutation to Sugata.[1]

It was translated into Tibetan by Paṇḍit Bhāgya-rāja, (སྐལ་ལྡན་རྒྱལ་པོ) and the interpreter Ḇlo-ḻdan-śeṣ-rab. The Tibetan version begins with a salutation to the Omniscient One, the remover of the obscurities of sight.

བརྩེ་ལ་གནས་ནས་སེལ་བ་ལ་བརྟེན་པའི ||
བདག་གཞན་རབ་ཏུ་སྨྲ་བའི་འཁྲུལ་བསལ་བྱས ||

(Tangyur, ṃdo, ze, leaf 308*b*.)

[1] དེ་ཉིད་ཤེས་ཚུལ་དོན་ངེས་མངོན་སུམ་མཚན་ལ་དེ་ལམ་རྗེས
ཞུགས་ཀྱིས ||
སྨུ་སྙིགས་ཅན་ངན་བསལ་བས་རྒྱལ་ཕྱིར་གང་གི་རྒྱལ་ཛ་རྒྱལ
ཆེན་ནམ ||
དམ་པའི་ཚུལ་ལུགས་བརྗོད་པའི་བདག་འདི་གཉོད་མེད་ངེས
པར་རབ་བསྒྲགས་པ ||
བདེ་བར་གཤེགས་པ་དེ་ལ་རྟག་ཏུ་རྩེ་གཅིག་བློས་ནི་ཕྱག
འཚལ་ལོ ||

(Tangyur, ṃdo. ze, leaf 334*a*.)

22. Vijñaptimātratā-siddhi, རྣམ་པར་རིག་པ་ཙམ་ཉིད་དུ་གྲུབ་པ—Establishment of a mere communication of knowledge.

The work, which extends over leaves 335*a*—338*b* of the Tangyur, ṃdo, ze, was composed by the great teacher Ratnasambhava-S'iva (རིན་ཆེན་འབྱུང་གནས་ཞི་བ). It was translated into Tibetan by the Nepalese Paṇḍit S'āntibhadra, and the Tibetan interpreter-monk S'ākya-ḥod of the province of Ḥbro (Dö). Subsequently it was published by the same Paṇḍit and Ḳlog-ṣkya-śeṣ-rab-ḅṛtsegs. The Tibetan version begins with a salutation to Mañjuśrī-Kumārabhūta.

23. Antara-vyāpti, ནང་གི་ཁྱབ་པ—Invariable concomitance in an inference for one's own self.

This work, which extends over leaves 338*b*—344*b* of the Tangyur, ṃdo, ze, was composed by the great teacher Ratnasambhava S'iva (རིན་ཆེན་འབྱུང་གནས་ཞི་བ). It was translated into Tibetan by the Indian sage Kumāra-kalaśa, and the interpreter-monk S'ākya-ḥod. The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

24. Hetu-tattva-upadeśa, གཏན་ཚིགས་ཀྱི་དེ་ཁོ་ན་ཉིད་བསྟན་པ—Demonstration of the real nature of the reason (middle term).

This work, which deals with the three phases of reason and extends over leaves 344*b*—354*a* of the Tangyur, ṃdo, ze, was composed by the great sage Jetāri. It was translated into Tibetan by the Indian sage Paṇḍit Kumāra-kalaśa, and the interpreter-monk S'ākya-ḥod. The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

25. Dharma-dharmi-viniścaya, ཆོས་དང་ཆོས་ཅན་གཏན་ལ་དབབ་པ—Settlement of the subject and predicate.

The work, which extends over leaves 354*a*—359*a* of the Tangyur, ṃdo, ze, was composed by the teacher Jetāri. The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

26. **Bālāvatāra-tarka,** བྱིས་པ་འཇུག་པའི་རྟོག་གེ—Disputation (logic) introductory to children.

It extends over leaves 359*a*—372*b* of the Tangyur, m̱do, ze, and is divided into three chapters: (1) m̱ṅon-sum or perception; (2) raṅ-don-gyi-ṟjeṣ-su-ḏpag-pa or inference for one's own self; and (3) gshan-gyi-don-gyi-ṟjeṣ-su-ḏpag-pa or inference for the sake of others.

The work, which was composed by the great teacher Jetāri (དགྲ་ལས་རྒྱལ་བ), opens thus:—

"Who by the lustre of his sermon has completely dispersed and cleared the veil of the gloom of ignorance, who is a single lamp to the three worlds—may that Bhagavān long remain victorious." [1]

The work was translated into Tibetan by the Indian sage Nāga-Rakṣita, and the Tibetan interpreter of the province of Sumpa (in Amdo) named Ḏpal-m̱chog-daṅ-poḫi-ṟdo-rje. The Tibetan version begins with a salutation to Mañjuśrī-kumārabhūta.

27. Yukti-prayoga, རིགས་པའི་སྦྱོར་བ—Application of reasoning.

The work, which extends over leaves 372*b*—373*a* of the Tangyur, m̱do, ze, was composed by the great Brahman sage and teacher of Kāśmira named Ratna-vajra (རིན་ཆེན་རྡོ་རྗེ). It was translated into Tibetan by the Indian sage Śri-Subh$^{\text{ūti}}$-Śiva (དཔལ་རབ་འབྱོར་ཞི་བ) and the interpreter-monk of Shu-chen named Tiṅ-ṅe-ḫdsin-ḇzaṅ-ho. The Tibetan version begins with a salutation to the great merciful lord Avalokiteśvara (སྤྱན་རས་གཟིགས་དབང་ཕྱུག)།

གང་གིས་གསུང་རབ་འོད་ཟེར་གཏི་མུག་གིས།།
སྨུན་པའི་རབ་རིབ་རྣམ་པར་གྲོལ་མཛད་གསལ།།
ས་གསུམ་གནས་ན་སྒྲོན་མ་གཅིག་བུ་ཡི།།
བཅོམ་ལྡན་འདས་དེ་ཡུན་རིང་རྒྱལ་གྱུར་ཅིག།།

(Tangyur, m̱do, ze, leaf 359*a*)

28. Tarka-bhāṣā, རྟོག་གེའི་སྐད—Technicalities of logic.

It extends over leaves 373*a*—413*b* of the Tangyur, ṃdo, ze, and is divided into three chapters: (1) perception; (2) inference for one's own self; and (3) inference for the sake of others.

The work opens thus:—

"Bowing down to the teacher, the lord of the world, I elucidate the Tarka-bhāṣā (the technicalities of logic) for the sake of enabling children of small intellect listen to the system of Dharmakīrti (ཆོས་ཀྱི་གྲགས)."[1]

The work was translated into Tibetan by the interpreter-monk D̲pal-l̲dan-b̲lo-gros̲-b̲rtan-pa, who begins the Tibetan version with a salutation to Buddha.

29. Kārya-kāraṇa-bhāva-siddhi, རྒྱུ་དང་འབྲས་བུའི་ངོ་བོ་གྲུབ་པ—Establishment of the relation of cause and effect.

The work, which extends over leaves 413*b*—418*a* of the Tangyur, ṃdo, ze, was composed by the great sage Jñāna-śrī-Mitra. It was translated into Tibetan by the Indian sage Paṇḍit Kumāra-kalaśa, and the interpreter-monk S̒ākya-ḥod. Subsequently it was retouched and published by the Nepalese Paṇḍit Anantaśrī, and the interpreter-monk aforesaid. The Tibetan version begins with a salutation to Mañjusrī-kumārabhūta.

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[1] བླ་མ་འཇིག་རྟེན་དབང་བཏུད་ནས ||
བྱིས་པ་ཡིད་གཞུངས་ཆུང་བ་རྣམས ||
ཆོས་ཀྱི་གྲགས་པའི་ལུགས་མཉན་ཕྱིར ||
རྟོག་གེའི་སྐད་ནི་རབ་གསལ་བྱ ||

(Tangyur, ṃdo, ze, leaf 373*a*.)

38. The Fats of *Garcinia* species.

By DAVID HOOPER.

Though frequently alluded to in works on the economic products of India very little is known regarding the fat expressed from the seeds of species of *Garcinia*. Kokam butter, the concrete oil of *G. indica*, is an article of commerce in Bombay. The seeds of *G. echinocarpa*, Thw., the 'Madol' of Ceylon, affords a thick oil used by the Cinghalese for burning in their lamps. Regarding *G. cambogia*, Desrouss, Cherry mentions an oil obtained from the tree which is used in the Nilgiris for medicine. The seeds of *G. tonkinensis* yield an oil in Cochin China. In addition to these, the Gamboge tree *G. morella*, Desrouss, yields a semi-solid fat which has long been used in Mysore for domestic purposes.

In 1857, a "Report upon the oils of Southern India" was made by Lieut. H. P. Hawkes. This valuable paper was an outcome of the Jury Report of the Madras Exhibition of 1855, and embodied all the information on the subject of Indian fixed oils collected up to that date, much of which has recently been overlooked. Under "Gamboge Butter," the author has the following remarks:—

"A semi-solid oil obtained from the seeds of *Garcinia pictoria* (of Roxburgh, now *G. morella*, Desrouss), growing abundantly in certain parts of Mysore and in the Western Coast jungles, especially near Cooly Droog. The oil which is procurable in moderate quantities, is prepared by pounding the seed in a stone mortar, and boiling the mass until the butter or oil rises to the surface; or by first roasting the seeds, and then proceeding as above. Two and a half measures of seed should yield one and a half seers of butter.

"In the Nugger division of Mysore it is sold at the rate of as. 1-4 per seer of Rs. 24 weight or £36-6 per ton: it is used as a lamp oil, and by the poorer classes as a substitute for ghee. The butter thus prepared does not seem to possess any of the purgative properties of the gamboge resin."

The tree is common in forests of Western India up to 3,500 feet, and extends for fully 120 miles along the Malabar ghats; it is also frequent in Ceylon. Except repeating what has been given in the above extract, Cooke, Talbot and Watt give no further particulars regarding the fat of the seeds. In the revised edition (1903) of "Animal and Vegetable Oils and Fats," by Dr. C. R. Alder Wright, the editor under *Garcinia morella* remarks: "Furnishes Gamboge butter concerning the chemical-constitution of which little or nothing is known."

It was, therefore, with great interest that I received, a short time ago, samples of two of these fats from the Range Forest Officer, Thirthalli, Shimoga District, Mysore. The following notes accompanied the samples :—

"1. A kind of ghee from "Murga" seeds (*Garcinia*). The seeds when they fall in May, June and July in the Taluks of Thirthalli, Koppa, Nagar and Sagar are picked up by the villagers and the oil is extracted. This is used like ghee for all cooking purposes."

"2. An oil from the seeds of "Gurgi" (*Garcinia morella*). The treatment is the same as above, but the oil is used for lighting, frying and as a medicine for sprains and injuries." . The Kanarese name "Gurgimara" signifies yellow gum tree.

The oils were semi-solid, of a yellow colour, and destitute of odour and taste. They were very similar in composition as the following constants indicate :—

	Murga.	Gurgi.
Specific Gravity at 50°C... ...	·900	·902
Melting point	37°C	33·5C
Acid value	3·49	13·79
Saponification value	198·20	194·74
Iodine ,, ...	53·72	55·46
Reichert Meissl ,, ...	·69	·62
Percentage of fatty acids ...	94·89	95·20
Melting point of ,, ...	56°C	55°C
Iodine value of ,, ...	56·38	57·81

One gram of the oil digested in 50 cc. of alcohol of 90 per cent. yielded 10·7 per cent. soluble fat and 89·1 per cent. insoluble.

At the temperature of 29°C, the fat was separated by filtration and pressure into 55·1 per cent. of liquid fat or olein and 44·9 per cent. of solid fats.

By calculating from the iodine value of these two oils the Murga fat yielded 62·33 per cent. olein and the Gurgi fat 64·34 per cent. By solution of the lead salt of the first named 63 per cent. was soluble in ether, indicating a similar proportion of olein.

With regard to the solid fatty acids, three recrystallizations from alcohol gave white fatty acids melting respectively at 61°, 66° and 70·5°. The last is characteristic of stearic acid which was present to the extent of about 30 per cent. Acids with the intermediate melting points corresponded with acid values 206·7 and 202·7, and may be referred to the presence of small quantities of palmitic acid.

The next Garcinia fat operated upon was Kokam or Goa butter obtained from the seeds of *Garcinia indica*, Chois.

I found it to yield the following constants :—

Specific Gravity at 50°C	·9106
Melting point	43°C
Acid value	41·3
Saponification value	191·5
Iodine ,, ...	25·0
Reichert Meissl ,, ...	·978

Percentage of fatty acids ... ... 93·5
Melting point of „ ... ... 61°C
Solubility in 50 cc. of 90 per cent. alcohol, 30 per cent.

The amount of olein calculated from the iodine value was 29 per cent. The amount of lead salt soluble in ether was 33 per cent. The fatty acids separated from the lead salt insoluble in ether afforded a melting point of 66·5 and an acid value of 202·96, indicating a mixture of palmitic and stearic acids. Recrystallized from alcohol the fatty acid melted at 69·5°C, and otherwise had the peculiar properties of stearic acid.

Heise in 1896 (quoted by Lewkowitsch "Chemical analysis of Oils, Fats and Waxes") states that Kokam butter consists chiefly of oleo-distearin and the fatty acids are oleic and stearic with small quantities of (probably) lauric acid. In the distillation of the fatty acids I was unable to observe any lauric acid both from the Gamboge butter and Kokam fat, but the melting points and acid values of the olein freed acids gave constants indicating an admixture of small quantities of palmitic acid with the stearic acid.

It is interesting to notice in these two fats that the constituent parts are almost identical; but while in the fat of *Garcinia indica* the olein is present in the proportion of one to two of stearin, forming oleo-distearin, in the fat of *G. morella* the olein is present in the proportion of two to one of stearin, forming stearo-diolein.

ins of the Kesar-saga. A Collection of rom Lower Ladakh. Tale No. III.

By A. H. Francke.

THE TALE OF SHELLI BUZHUNG.

Abstract of Contents.

When Kesar was old, there was a little boy in the castle of *gLing*, called *Shelli bu zhung* ('the little boy of Crystal') who had no father.[1] It was found necessary to provide a bride for him, and as the hermit *rTse dgu* was the only person likely to know a suitable bride, a little servant-boy was sent to ask his advice. The boy received a letter authorizing him to ride on the horse *Dunggi dar dkar*, which was in the care of Agu *Zlaba bzangpo.* This Agu was 1,050 years old and had a son called *Zlaba dkarpo. Zlaba dkarpo* could not believe that the horse was to be entrusted to the little servant-boy, and went before king Kesar together with the boy, to make special enquiries. But Kesar gave the same order once more, and the child was carried by the horse before the hermit's house, after it had jumped with him so close to the sun that the boy got almost burnt The hermit, however, was offended, because Kesar had sent a little boy instead of a proper Agu. But the boy was carried by dragons directly before the hermit's house. Then he made a bow and arrow and frightened the old man. The latter read Kesar's letter and said that the bride of Kesar's son, *rGyalsa dkarpo*, was to be born to the king of *Groyul*, whose castle was on the top of the three realms of the world. She was to be born together with many powerful jewels. He gave the advice to make friends with the grandmother who took care of the garden below *Groyul*; and prophesied that the bride would be obtained, although one of the Agus would lose his life in the task (*mDā dpon gonyn*[illegible]). When the answer of the hermit was brought to the castle of *gLing*, *'aBruguma* did not like the news, and entreated Kesar to select a bride from the daughters of the country. He, however, went off with his son. When they arrived half-way to *Groyul*, they met with the Nyopas (buyers of the bride) of many countries, who wished to gain the daughter of the king of *Groyul* for themselves They took night-quarters at the grandmother's house. The son first frightened the grandmother by burning her garden down, and then appeased her by restoring everything in a miraculous way. During night, when the daughter of the king of *Groyul* was born, the earth was filled with light. But the boy had a bad dream daughter of an ogre had been born. Howe comforted him, saying, that the daughter wa the Nyopas of many countries had already a gaining her. Also the new-born daughter of th had a dream, in which she saw two men and an og Agu *dPal moi astag*) of terrible shape, arrive, and her off by twisting her hair round a spear. But her mother comforted her, saying, that it was a good dream, and that she was to become the wife of king Kesar's son.

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[1] Just as Kesar had no human father, his boy was also supposed to have none. Compare "A Lower Ladakhi Version of the Kesar-saga," Tale No II.

The boy *rGyalbu rgyalsa* wished to ride to and brea bazaar of *Groyul*, which consisted of bell-metal; but did not succe He therefore asked his father to lend him the horse *rKyang rgod dbyerpa*. Riding on him, he broke the bazaar of bell-metal to pieces. This was the signal for the people of *Groyul* to send their army against the men of *gLing*. The first whom *rGyalbu rgyalsa* met was *Lag dmar blon chen*. Although *Lag dmar blon chen* was on the opposite shore of a lake, he was killed by a miraculous war dance of the boy, when the drums used for the dance went off suddenly and entered into the body of the giant. The second hero of *Groyul* was *Mig dmar*. He went to fight the boy of *gLing* in spite of his wife's warnings. He tumbled into the water which was between the combatants, on account of the strong wind produced by the horse *rKyang rgod dbyerpa* with his wings. Then they decided on a contest in arrow-shooting. The heavy arrow of the giant split the rocks asunder; but the light arrows of the boy caused so much wind that the giant was thrown into the water a second time. Then the giant and the child rode a race. The giant arrived at the goal first and cooked some tea. But the boy, although he arrived a little later, had his tea sooner ready. Then they rode a race to the top of a mountain On the same day also a Buddha and a Bonpo priest had betted who would be first on the top of the same mountain. The Buddha and the boy of *gLing* both arrived there first. From the top of this mountain the child pronounced a blessing, according to which the countries were to be filled with what they are famous for in the eyes of the Ladakhis: China with silks of the dragon pattern; Central Tibet with tea; Yarkand with horses; the West Tibetan lake-district with salt and wool; Purangs with beautiful girls; Ladakh with tiger-like heroes; Zangskar with Yaks; Purik with *Gro dkar* flowers; Baltistan with apricots; Kashmir with rice! Then the boy killed the giant by snipping with his fingers against the giant's forehead, and ordered him to be reborn to a female Kyang of fifty years of age.

Kesar went with his son to the engagement-beer of the king of China's daughter and sat down on a throne of sticks. The maid-servant, *Gochod*, offered the beer and told the guests to drink it without touching the pot.[1] As the honoured guests, who sat

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[1] The same scene occurs in "A Lower Ladakhi Version of the Kesarsaga." Tale No III.

[illegible] and silver, were unable to perform the task, [illegible] it superfluous to ask the two men of *gLing* to try. [illegible] boy prayed her to offer the beer to him and gave [illegible] me. Then he threw the pot towards the sky with his [illegible] he beer was consumed by the 360 gods and nâgas. [illegible] irls were won by the men of *gLing* But when the boy exhibited his great poverty, the heroes of *Groyul* would not give him the princess and sent the giant *Riwa* (or *Ribo*) *blon chen* against him. The boy fled before the giant, as a partridge flies before a falcon. Therefore Kesar took the shape of a crow and asked *dPalmoi astag* (the female Agu) to come to his assistance. She went to fight the giant and asked Agu *mDā dpon yongma* to come also. The giant was defeated by the woman in a great arrow and spear contest; but when he fell down, *mDā dpon gongma* happened to come under the giant's thumb and was smashed.

During this combat, the son of the king of China (*rGyanag*) had carried off the bride to his own country. Therefore Kesar, his son, and the Agus, went to China. A grandmother made the arrangement that on the day of the prince of China's wedding to to the princess of *Groyul*, *dPalmoi astag*, who had taken a beautiful shape, was to be married to the minister of China. But when the wedding dance was performed, *dPalmoi astag* started a war-dance, followed by Kesar and the other men of *gLing*. During this dance, they killed the king of China and all his men and the female Agu put her spear in *Shel ldang lhamo's* hair, which she twisted round it, and dragged the girl out of the castle on the road to *gLing*. Only after long entreaties by the whole party and the gods was she willing to let the girl ride on the horse of her bridegroom.

Then a message was sent to *gLing* with two doves, and a great wedding was celebrated on the hill *Tisuru* (Kailasa).

VOCABULARY AND NOTES.

ཤེལ་ལི་བུ་ཞུང་། *shelli buzhung* (the same as *bu chung*): see Ladakhi Grammar, Introduction. The name means 'The little boy of glass (or crystal).'

ལྗག་རེས། *ljag res*, turn; [it is his] turn.

ཕོ་དབས། *pho tabs* (or *thabs*) on hire, borrowed.

ཁས་སྨན། *khas sman* (or *khas dman*), defeat.

ཕུག་སྐོར་བཅོ་བརྒྱད། *phug skor bco brgyad*, eighteen-times as much as is thrashed out by oxen at a turn.

ཟེ་ཡ། *zeya*, the same as *zeba*, name of a horse.

ཆར་སྐྱིབ།	*char skyib*, a cavity which protects a wanderer in rainy weather.
བ་རི།	*bari*, a small box.
ཁམ་ཅུ།	*khamcu*, mouth.
ཐེ་ཚོམས།	*the thsoms*, or *the thsom*, doubt.
ཉེད།	*nyed*, or *nyid*, self.
ཤེལ་ལྡང་ལྷ་མོ།	*Shel ldang lhamo*, 'goddess of rising crystal,' name of the princess of *Groyul*.
བཏོམ་ཁྱིལ།	*btom khyil* — names of precious stones; *ljag* probably stands for *lcags*; compare *ljogpo* for *lcogpo*.
བཏོམ་ལྗག།	*btom ljag*
བཀུག་ལྗག།	*bkug ljag*
བཀུག་ཅས།	*bkugcas*, here in the sense of 'to fetter,' 'put in chain.'
བཏོར་བ་ནག་པོ།	*btorba nagpo*; 'black scatterer,' name of a Nâga.
ངོ་གྲུབ།	*ngo grub*, the same as *dngos grub*, blessing.
ཡར་ངོའི་ཟླ་བ།	*yar ngoi zlaba*, first half of the month.
མར་ངོའི་ཟླ་བ།	*mar ngoi zlaba*, second half of the month.
རི་བོ་བློན་ཆེན།	*ribo blon chen*, 'mountain, great minister,' name of a giant.
ཆར་ཏེ།	*charte*, descending; said of the eyelids which descended down to the mouth.
བར་ཞྭ།	*bar zhva*, kind of lama's cap.
ཕལ་ཕལ།	*phalphal*, said to mean 'noble' in this connection; but more probably it means 'general.'
ཕོ་ཕོ་རོག།	*pho phorog*, male crow.
མོ་མོ་རོག།	*mo morog*, female crow.
རྫ་ག།	*rdzaga*, clay.

ལམ་གྱི་ཚེ་རྐུ་ཅས།	*lamgyi thse rkucas* 'steal the time of the road,' shorten the road.
ཏི་ལ།	*tila*, a gold coin.
བ་ཟཱར།	*bazār*, Bazaar.
ཁག་རླང་།	*khag rlang*, part of the steam.
སྙས་མགོ།	*snyas mgo*, the same as *snyas mgo*, pillow.
བུང་བུ།	*bungbu*, the same as *bongbu*, donkey. It is a case of assimilation of the vowel to the second syllable.
སྒ་ར་སྒུ་རེ།	*sgara sgure*, very old.
གྲིབ་མག།	*gribmag*, or *gribma*, shadow
ཅུན་ཅུན།	*cun cun*, locks of hair.
ཅུ་ཏྲི།	*cutri*, or *cuti*, pigtail. Hindi, *cōṭī*.
གཡས་ལྡོར་གཡོན་ལྡོར།	*γyas ldor γyon ldor*, reaching into the right and left cheek ; said of a large mouth.
དཔལ་འཇམ་རིང་མོ།	*dpal 'ajam ringmo*, 'long and soft splendour,' name of a spear.
ལི།	*li*, metal used for bells.
རྨོག།	*rmog*, in this connection is said to mean 'hair round the feet of a horse.'
འགྱིང་ཚུལ་ཞིག་འགྱིང་ཅས།	'*agying thsul zhig*' *agyingcas*, to surpass a certain height.
འབྱེན་ཁྲོ།	*'abyen khro*, probably 'hitting the target.'
གྲ་ཕོག།	*gra phog*, the first blow in a game of Polo.
ཟེར་མོང་།	*zerṁong*, claws of a bird.
ལོ། .ཙ	*ltso*, remnants of food found in the stomach.
ལག་དམར་བློན་ཆེན།	*lag dmar blon chen*, 'red hand, great minister,' name of a giant.

ལག་ཐོ་བཏང་བ།	*lag tho btangba*, 'put the hands high'; said of an impatient horse.
རྒྱལ་ཚ་དཀར་པོ།	*rgyal thsa dkarpo*, instead of more common *rgyal sa dkarpo;* name of Kesar's son.
ཡིན་ན་རེ།	*yinna re*, even if it is
ཁུར་ཅིག།	*khur cig*, sneezing of the horse.
དར་དཀར་ཙེ།	*dar dkor tse*, name of a village.
རྩུགས།	*rtsugs*, a mark on the skin of the horse.
སྣན་མ།	*snanma*, an addition to a gift
བྱ་ར་བྷན་དྷེ།	*byara bhandhe*, name of a devil.
ཨ་ལེབ། ཙེ་ལེབ། ཡང་ལེབ།	*aleb*, *tseleb*, *yangleb*, flat stone.
ཏང་ཏང་ཏ་ར་ཏང་ཏང་ཏང་། དྲོ་ལོང་མ་ལོང་དྲོ་ལོང་ལོང་།	*tang tang tara tang tang tang* *drolong malong dro long long.* — The sound of the drum; onomatopoetical expressions.
ཞིབ་ཞིབ།	*zhib zhib*, little pieces.
རྩིང་རྩིང་།	*rtsing rtsing*, large pieces.
གསེར་གྱི་ཨ་རག་ཇོ་ཇོ།	*γsergyi arag jojo*, 'lady of the yellow arac,' a name.
གསེར་གྱི་མེ་ཏོག་མཁར།	*γsergyi metog mkhar*, 'castle of the yellow flower,' name of a castle.
གསེར་རལ་མཁན།	*γser ral mkhan*, 'gold locks,' name of a boy.
གཡུ་རལ་མཁན།	*γyu ral mkhan*, 'turquoise locks,' name of a girl.
ཆབ་ཆིབ།	*chab chib*, a small pond.
མདའ་སྡུར།	*mdâ sdur*, competition in arrow-shooting.
ལྟོར་ཅེས།	*ltor ces*, split.
ཡབ་ཅེས།	*yabces*, blow away (by the wind).

ཆང་ཟུམ། *chang zum*, the middle part of the bow.

ཆོམ་སྟགས། *chom stags*, the corners of the bow.

ཁོ་མགས། *kho mags*, the same as *khoma*, knapsack.

བེན་པོ། *benpo*, monk (probably of the *Bonchos*).

ཧལ་མན། *halman*, the best kind of apricot.

འོ་ལོ། *'olo*, a kind of rice.

སེར་ག། *serga*, split.

ཤན་པ། *shanpa*, butcher.

སེན་དྲག། *sen drag*, snip with the finger.

དོལ་ཐོག། *dol thog*, a soft kind of stone.

ཉ་ཤིང། *nya shing*, yoke of oxen.

ཆུ་ཐག། *chu thag*, leather strap, to tie oxen to a plough.

ཕ་ཚ། *pha thsa*, sack-cloth.

རྩིང་ཀེ། *rtsingke*, the same as *rtsingba*, coarse.

གུ་རམ། *guram*, syrup.

ཁན་ཏྲེ། *khantre*, Lower Ladakhi for *khante*, bitter.

ཏིག་ཏྲ། *tigtra*, or *tigta*, Gentiana flower.

སག་སྡར། *sag sdar*, the same as *lcags bdar*, file.

དགོངས་ཕེ། *dgongs phe* (or *phye*), evening meal

ན་སོ་ཆུ་ངུན། *naso chungun*, not of many years.

ཤས་ལུག། *shas lug*, herd of sheep.

རྩ་ར། *rtsara*, search.

ཀ་རོག་གཡང་འཛིན། *karog γyang 'adzin*, name of a Mon.

ཐེ་ཕོང། *the phong*, the same as *the bo*, thumb.

མེ་སླབ། *me slab*, the same as *me 'ljab*, flame.

ཝ་ཛིར། *wazir*, wazir.

སྤྱལ་ཅས། *spyalcas*, to pay.

རྒོ་ལོ། *rgolo*, body.

རྐང་ཁྱིལ། *rkang khyil*, name of a marullon.

རྐང་རིངས། *rkang rings*, name of a Bheda.

ཏི་སུ་རུ། *tisuru*, name of a mountain.

ཤེལ་ལི་བུ་ཞང་གི་སྒྲུངས་ཡིན་ནོ།།

ཡོད་ཚུག། གླིང་མཁར་སྟོད་ལ་ཕ་མེད་བྲུ་གུ་ཞིག་ཡོད་ཚུག། ཕ་སྤུན་བཞི་བཅུ་ཞ་བརྒྱད་དང། མ་སྤུན་བཞི་བཅུ་ཞ་བརྒྱད་བསྡུ་སྡེ་གསུང་གྲོས་བཅོས་ནས། རྒྱལ་ལྷམ་ཀ་སར་ནས་སོང། འདི་ཕ་མེད་བྲུ་གུ་ལ་མིང་ལ་ཤེལ་ལི་བུ་ཚུང་ཏོག། ཁོ་ལ་བགམ་ཞིག་འཁྱིང་བ་རྒྱལ་ཟེར་ས། དཔའ་བོ་ཚང་མའི་གྲབས་ནང་ན། སེ་མི་སློབ་དཔོན་རྩ་དགུའི་རྩར་ཞུ་ཅེས་ལ་སྤུ་ཆ་ཡིན། དཔའ་བོ་སྤུའི་ལྷུག་རིས་ཡིན་ཟེར་ས་པ། ཀ་སར་རྒྱལ་པོས་སོལ་བ། ཉེ་ཞ་དཔའ་བོ་ཀུན་ལ་འདིབ་རྒྱལ་ཆ་ཡིན། མ་སྐྱིད་ནའང་གྲིག། ངའི་རྩ་བྲུ་གུ་ཞིག་ཡོད། ཁོ་ལ་ལས་ཤེས་ཡིན་ནས། མི་ཤེས་ཚོད་ལྷ་ཅེས་ལ་ཁོ་བཏང་ཡིན་ཟེར་ས་པ། དཔའ་བོ་ཚང་མས་རྒྱལ་ཟེར་ས། དེ་ནས་

ཀེ་སར་རྒྱལ་པོས། ཁོ་ལ་རྟ་ཕོ་དུང་གི་དར་དཀར་ཕོ་དབས་ལ་བདང་སྟེ། མེ་མེ་སློབ་དཔོན་རྩེ་དགུ་ལ་ཞུ་ཤོག་ཅིག་བཞང་སྟེ་ཁོ་འི་ལག་ཏུ་བདངས། རྟ་ཕོ་དུང་གི་དར་དཀར་ཁོ་ལ་ཏོང་ཟེར་ཏེ། ཆིབས་དཔོན་ཟླ་བ་བཟང་པོ་ལ་ཡི་གེ་ཞིག་བྲི་སྟེ་བཏངས་པ། ཁོས་ཡི་གེ་ཁྱེར་ཏེ་ཆིབས་དཔོན་ཟླ་བ་བཟང་པོ་འི་རྩར་སོང་བས། ཆིབས་དཔོན་ཟླ་བ་བཟང་པོ་དེ་ཀ་སྟེ་ལོ་བསྟོང་དང་ལྔ་བཅུ་ལོན་ནས་འགྲུལ་མ་ཐུབ་པར། ཕྲུག་མའི་ནང་དུ་གཉིད་ལོག་སྟེ་ཡོད་ཚུག། དེ་ཕྲུ་གུ་ཆིབས་རའི་མདུན་ལ་སོང་སྟེ་གླུ་འདི་ལྟར།།

ཨ་རྗེ་ཆིབས་དཔོན་ཁྱོད་དངོས་ལ་ཉོན་དང་།
ཆིབས་དཔོན་ཟླ་བ་བཟང་པོས་བདག་ལ་གསན།
རྟ་ཕོ་དུང་གི་དར་དཀར་ང་ལ་སྐུལ་ལོ།
རྒྱལ་ལྷམ་ཀེ་སར་གྱི་བཀའ་ཞིག་ཡིན་ལོ།
གླིང་མཁར་སྟོད་ལ་ཕ་མེད་ཕྲུ་གུ་ཞིག་འདུག་ལོ།
དེ་ཕྲུ་གུ་ལ་མདུན་མ་ཞིག་ཞུ་ཡིན་ལོ།
གླིང་གི་དཔའ་བོ་ཚང་མས་གསུང་གྲོས་ཤིག་བཅོས་ལོ།
མདུན་མ་གན་འདུག་མེ་མེ་ལ་ཞུ་བ་རིག་ཆེན་ལོ།

དེ་ཟླུག་ཟེརསཔ། ཆིབས་དཔོན་ཟླ་བ་བཟང་པོ་ལ། བུ་ཚ་ཟླ་བ་དཀར་པོ་ཟེར་མཁན་ཞིག་ཡོད་ཚུག། ཁོ་གཞན་མ་ཕྲུ་གུ་ཚང་མ་དང་མཉམ་པོ་ཚེ་ལོ་རྩེ་འིན་ཞིག་ཡོད་ཚུག། ཚེ་ལོ་རྩེ་འིན་ཞིག་ཀུ་ཙེ་བདང་གིན་ཞིག་ཡོད་པ་སང་། དེ་ཕྲུ་གུས་སྐད་མ་ཚོར་བས། ཕྲུག་མའི་ནང་དུ་ཨ་བ་ལ་ཚོར་ཏེ། སྤྲོ་ཡོང་སྟེ་ཨ་བས་གླུ་ཞིག་བཏངས་སོ།།

འདི་རིང་གཉིད་དི་སྨི་ལམ་དེ་ངན་པ་ཞིག་མཐོང་ལོ།
ཞག་ངན་མཚན་ནི་སྨི་ལམ་རྟོག་པོ་ཞིག་མཐོང་ལོ།
ངའི་གླིང་མཁར་སྟོད་ལ་ཁམས་སྨན་ཞིག་ཡོང་བ་མཐོང་ལོ།
གླིང་ཀ་སར་རྒྱལ་པོ་ལ་ཁམས་སྨན་ཞིག་ཡོང་བ་མཐོང་ལོ།
ང་ལ་བུ་ཚ་ཞིག་སྐྱེ་སྟེ་ཡོད་ལོ།
ཕ་ཙན་དན་ལ་བུ་རྒྱུ་ཤིང་ཞིག་སྐྱེས་ལོ།
ང་ལ་ལོ་སྟོང་དང་ལྔ་བཅུ་ཞིག་ལོན་ལོ།
ད་རུང་བྲིས་པའི་ལོ་སྐོར་ནང་ཡོད་ལོ།
ངའི་རྟ་ཁང་ནས་རྟ་ཞིག་ཁྲོང་ལོ།
ངའི་མདའ་ཁང་ནས་མདའ་ཞིག་ཁྲོང་ལོ།
ངའི་གཞུ་ཁང་ནས་གཞུ་ཞིག་ཁྲོང་ལོ།

དེ་ཟུག་ཟེར་དེ་ཀུ་ཅོ་ཆེན་མོ་བདངས་པ་སང༌། བུ་ཚོས་ཆོ་ལོ་རྩེས་རྩ་ཀུ་ཅོ་ཆོར་དེ། ཀླ་བ་དཀར་པོ་ལྷ་ལ་ཡོངས་པ། ཆིབས་རའི་ཟུར་ལ་ཕྲུ་གུ་ཐེ་ཕོང་ཟམ་ཞིག་ཡོད་ཚུག། ཀླ་བ་དཀར་པོས་འདྲིས་ཟ། ལྷ་ཕྲུ་གུ་ཁྲོད་གནས་ཡོངས་ཟེརས་པ། ཕྲུ་གུས། ང་གླིང་ཡུལ་ནས་ཡོངས། གླིང་མཁར་དུ་ཕ་མེད་ཕྲུ་གུ་ཞིག་འདུག་པ། རྒྱལ་ལྷམ་ཀ་སར་གྲས་སོང༌། དེ་ཕྲུ་གུ་ལ་མདུན་མ་ཞིག་ཞུ་ཅེས་ལ། གླིང་གི་དཔའ་བོ་དང་ཚང་མས་གྲབས་བཅོ་སྟེ། ང་མེ་མི་སློབ་དཔོན་རྩེ་དགུ་ལ་ཞུ་ཅེས་ལ་ཆ་ཡིན། རྟ་ཕོ་དུང་གི་དར་དཀར་དེ་ང་ལ་ཕོ་དབས་ལ་དོང་མོལ་དེ། ཀ་སར་གྱིས་ཏུ་ཀུས་དང་ཕྱུག་བྲིས་སྣུལ་ཏེ་ཡོད་ཟེར་དེ། ཡི་གེ་ཁྲོ་འདི་མདུན་ལ་ཕངས་བདངས་པ། ཀླ་བ་དཀར་པོས་ལེན་དེ་ཡི་གེ་ཞིལ་ནས། ཁོ་ལ་རྟ་བཏང༌

ཅེས་ལ་ཧམ་པམ་ཡོང་བ། ཀླ་བ་དཀར་པོ་ཡི་གི་ཁུར་ནས་ཕྲུ་གུ་དང་
མཉམ་པོ་གླིང་མཁར་དུ་སོང་སྟེ། ཀེ་སར་ལ་ཞུ་ཕུལ་གླུ་འདི་ལྟར།།

ངའི་རྒྱལ་པོས་འང་དངོས་ལ་ཉིན་དང།
རྒྱལ་ལྷམ་ཀེ་སར་གྱིས་བདག་ལ་གསན་དང།
ཨ་བུ་ཀླ་བ་བཟང་པོ་རྒས་ནས་ལོ་སྟོང་དང་ལྔ་བརྒྱ་ལོན།
ཕྱུག་སྐོར་བཅོ་བརྒྱད་ནང་དུ་བཞུག་སྟེ་ཡོད།
ཁ་ལ་དུང་སོ་ལན་གསུམ་ཁོར་དེ་ཡོད།
ཁོ་འི་བུ་ཚང་རང་ཡིན་ལོ།
ཉིད་ཀྱི་གསོས་བུ་མཉམ་པོ་ཕྱུག་བྲིས་བསྐྱབ་ལོ།
བྱུང་ཕྲུག་གསོས་བུ་དང་མཉམ་པོ་ཧུ་ཀུམ་ཕེབས་ལོ།
ཁོ་ལ་ཧྲ་ཕོ་བདང་བའི་ངོ་མ་རྟོགས་ལོ།
དུང་རི་དར་དཀར་བདང་བ་མ་ཤེས་ལོ།
ཧྲ་དེ་ཁོ་ལ་བདང་ང་མ་བདང་ལེ།
དུང་རི་དར་དཀར་བདང་ན་གྲིག་ག་ལེ།

དེ་ཟུག་ཞུས་པ་སང། ཀེ་སར་གྱིས་ལན་དུ་གླུ་འདི་ལྟར།

གླིང་གི་ཕྲུ་གུས་དངོས་ལ་ཉིན་ལོ།
ཀླ་བ་དཀར་པོས་བདག་ལ་གསན་ལོ།
གླིང་གི་དཔའ་བོ་ཚང་མས་གྲབས་བཅོས་པ་ཡིན།
གླིང་གི་གླིང་ཕྲུག་ཁོ་ལ་མདུན་མ་ཞུ་ཅེས་ཡིན།
གླིང་གི་ཕ་མེད་ཕྲུ་གུ་ལ་མདུན་མ་ཞུ་ཅེས་ཡིན།
ཁོ་ལ་ཧྲ་ཕོ་བདང་དགོས་སུག།

དུང་རི་དར་དཀར་བཟང་དགོས་ཡིན།
ཁོ་ཉི་མི་མིའི་རྩ་ཆ་ཅེས་ཡིན།
མི་མི་སློབ་དཔོན་ལ་ཞུ་ཆེས་རིག་ཡིན་ལོ།
ཧ་ལ་སྣ་ཆ་བསྟུད་དེ་བཟང་དགོས་པ་ཡིན།
བྱང་ཕྲུག་ཧ་ལ་སྦྱོན་དེ་དོང་ལོ།
ལག་པ་དང་ཟེ་ཡ་གཉིས་ཀ་བཅིང་སྟེ་དོང་།
ཧའི་ཁང་ནས་ཐུས་ལ་གཞིན་པའི་ཧ་ལྕུག་དོང་།
ཐུས་ནས་ཁང་ལ་ཐིམ་པའི་ཧ་ལྕུག་དོང་།

དེ་ཟླུག་སོ་ལ་པ་སང་། རླབ་དཀར་པོ་དང་བྱང་ཕྲུག་གཉིས་ཀ་སོང་བས། རླབ་དཀར་པོས་ཧ་ཐིང་སྟེ་སྣ་བསྟུད་ནས། བྱང་ཕྲུག་སྦྱོན་ནས་ལག་པ་དང་ཟེ་བ་བཅིང་སྟེ། ཁང་ནས་ཐུས་ལ་གཞིན་པའི་ཧ་ལྕུག་ཅིག་བཟང་སྟེ་ཕྱུད་བཟང་ས་པ་སང་། ཁོ་ནམ་མཁའ་ལ་ཕྱིར་དེ་མགོ་ལ་ཉི་མའི་གཟེར་ཡོག་སྟེ། ཨ་ཚ་ཚ་ཟེར་ས་པ། ཐུ་ཐུས་ཟེར་ས་པ། དཔྱིད་གར་ཆ་ཅེས་ཡིན་ཟེར་ས་པ། ང་མི་མི་སློབ་དཔོན་གྱི་མཚམས་ཁང་དུ་ཆེན་ཟེར་ས། དེ་ནས་ཧས་མི་མིའི་མཚམས་ཁང་གི་སྒོ་ལ་ཕྱིར་དེ་བསློབ་སོང་། དེ་ནས་ཁོས་མི་མི་ལ་གཏམ་ལན་ལ་གླུ་འདི་ལྷར།

གད་པ་གསེར་གྱི་ཆར་སྐྱི་བ་ཀྱི་ནང་ན།
དགོན་པ་དུང་གི་བ་རི་ཞིག་འདུག་ལོ།
དགོན་པ་དུང་གི་བ་རི་ནང་ན།
མི་མི་སློབ་དཔོན་རྩེ་རྒུ་བཞུགས་ཡོད་ལོ།
མི་མི་སློབ་དཔོན་གྱིས་དངོས་ལ་ཉོན་ལོ།

བླ་མ་སྐྱོ་བ་དཔོན་གྱིས་བདག་ལ་གསན་ལོ།
གླིང་གི་དཔའ་བོ་ཚང་མས་གསུང་གྲབས་ཤིག་མཛདས་ལོ།
གླིང་གི་ཕ་སྤུན་ཚང་མས་བཀའ་གྲོས་ཤིག་མཛད་སོང་།
གླིང་གི་གླིང་ཕྲུག་ཁོ་ལ་མདུན་མ་ཞིག་ཞུ་ཡིན་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་ལ་སྐྲ་བག་ཅིག་ཞུ་ཡིན་ལོ།
མོ་དཔེ་བཏིང་སྤྱེ་མོ་ཞིག་དོབ་ལོ།
རྩིས་དཔེ་བཏིང་སྤྱེ་རྩིས་ཤིག་སྐོར་ལོ།
རྒྱལ་བུ་ལ་མཛེས་པའི་ཇོ་ཇོ་ཞིག་ག་ན་འདུག་གཟིགས་ལོ།
ཤེལ་དཀར་ལ་མཛེས་པའི་རྒྱལ་མོ་ཞིག་གང་ན་འདུག་གཟིགས་ལོ།
ཤར་ན་འདུག་གནུབ་ན་འདུག་གཟིགས་ལོ།
བྱང་ན་འདུག་གལྷོ་ན་འདུག་གཟིགས་ལོ།
གཟིག་སྟེ་ང་ལ་གཏམ་ལན་ཞིག་སྤྲུལ་ལོ།

དེ་ནུ་གཟིམས་པ། མི་མེ་ཡམ་མཚན་ཞིག་སོང་སྟེ། གཏམ་ལན་གླུ་ཞིག་བཏངས་སོ།

གླིང་གི་ཕྲུ་གུས་དངོས་ལ་ཉོན་ལོ།
ཀེ་སར་གྱི་བྱང་ཕྲུག་བདག་ལ་གསན་ལོ།
གླིང་གི་རྒྱལ་བུ་ལ་མདུན་མ་ཞུ་ཅེས་ཡིན་ན།
གླིང་གི་དཔའ་བོ་ཞིག་ཅིལ་མ་ཡོངས་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་ལ་མདུན་མ་འདྲི་ན།
དཔའ་བོ་ཞིག་མ་ཡོངས་ས།
གླིང་ཡུལ་ལ་མི་རྒོན་ཞིག་སོང་ང།

ཁྱེད་ཀྱིས་ང་ལ་ཚོད་ལྟ་ཞིག་ཡིན་ན།
ཁྱེད་ཀྱིས་ཟེར་མཁན་ལ་ངས་ཡིད་མི་ཆེས།
ཁྱེད་གྱེན་ལ་ཆ་ན་གྱེན་ལ་སོང་ལོ།
ཁྱེད་ཐུར་ལ་ཆ་ན་ཐུར་ལ་སོང་ལོ།
ཁྱེད་ལམ་མི་ཤེས་མཁན་ཡིན་ན་ངས་ལམ་བསྟན་ཡིན།
འདི་མཚམས་ཁང་གི་ལྟག་ལ་ལམ་དཀར་པོ་ཞིག་ཡོད་ལོ།
ལམ་དཀར་པོས་ཆ་ན་སྟེང་ལྷ་ཡུལ་ལ་བསླེབ་ཡིན།
དགོན་པའི་དཀྱིལ་ན་ལམ་དམར་པོ་ཞིག་ཡོད་ལོ།
ལམ་དམར་པོས་ཆ་ན་བར་བཙན་ཡུལ་ལ་བསླེབ་ཡིན།
དགོན་པའི་འོག་ན་ལམ་ནག་པོ་ཞིག་ཡོད་ལོ།
ལམ་ནག་པོས་ཆན་འོག་ཀླུ་ཡུལ་ལ་བསླེབ་ཡིན།
ཁྱེད་འདིར་མ་ཡོང་ཕར་ལ་སོང་ལོ།

མི་མིས་དེ་ཟླུག་ཟེར་ས་པ། ཕྲུ་གུ་ལ་ཅང་ཟེར་མ་ཤེས་པར། དེར་བལྟས་པ། མི་མི་ལམ་སྤྲངས་པ་ལ་འབྲུ་ནག་པོ་བདུན་གནམ་ལ་ཕྱུར་གྱིན་ཞིག་འབྲུ་དཀར་པོ་བདུན་ས་ལ་ཕྱུར་གྱིན་ཞིག་ཡོད་ཚུག། དེ་འབྲུའི་ཁམས་ཙ་ཐོ་གང་རེ་ཡོད་ཚུག། ཁྱུང་ཕྲུག་དེ་ན་འབྲུ་ཀུན་གྱི་མདུན་ལ་སོང་སྟེ་སླུ་ཞིག།

ཁྲ་འབྲུ་དཀར་འབྲུ་ནག་དངོས་ལ་ཉོན་ལོ།
ཁྱུང་ཕྲུག་ངའི་བདག་ལ་གསན་ལོ།
གླིང་གི་གླིང་ཕྲུག་ཁོ་ལ་མདུན་མ་ཞུ་ཅེས་ཡིན།
རྒྱལ་བུ་རྒྱལ་ས་ལ་སྐྱ་བག་ཞུ་ཅེན་ལོ།

གླིང་གི་དཔའ་བོ་ཚང་མས་གྲགས་ཤིག་ཅེས་པ་ཡིན།
ང་ནི་མེ་མོ་ལ་ཞུ་ཅེས་ལ་བཏངས་པ་ཡིན།
ང་ལ་ལམ་བསྟན་རོགས་རིག་མཛོད་ལོ།
ང་མེ་མེའི་སྒོ་འི་མདུན་ལ་སླེབ་བཅུག་པར་མཛོད་ལོ།

དེ་ཟླུག་ཟེརས་པ་སང། འབྲུ་ཚང་མས་ཟེརས། ཁོ་ལ་ལམ་བདང་ན་རྒྱལ་བ་ཆེན། ཁོ་རྒྱལ་ལྷམ་ཀ་སར་གྱི་ལས་ཁག་ཅན་ལ་ཡོངས་མཁན་ཞིག་ཡིན་ནོག་ཟེར་དེ་འབྲུ་ཚང་མས་ཁམ་ཙུའི་ཁ་ཁྱེར་དེ། མེ་མེའི་མཚམས་ཁང་གི་སྒོ་ལ་ཁྲིརས་པ། དེ་ནས་བྱུང་ཕྲུག་གིས་དེ་རྩ་ཙྭ་ཁམ་པ་ཞིག་ཡོད་ཚུགས་པ། དེ་བོ་ཕུད་དེ་གཅིག་ལ་མདའ་བཅོས། གཅིག་ལ་གཞུ་བཅོས། གཞུ་ལ་སྐྱུད་པ་ཞིག་བདག་སྟེ། མདའ་དང་གཞུ་ཁྱེར་དེ་མེ་མེ་ལ་གླུ་ཞིག་འདི་ལྟར།

ལྷ་མེ་མེ་སྐྱོབ་དཔོན་དངོས་ལ་ཉོན་ལོ།
ལྷ་སྐྱོབ་དཔོན་རྩེ་དགུ་བདག་ལ་གསན་ལོ།
ལག་པ་གཡོན་པའི་ནང་དུ་གཞུ་ཞིག་ཡོད་ལོ།
ལག་པ་གཡས་པའི་ནང་དུ་མདའ་ཞིག་ཡོད་ལོ།
བདང་ང་མི་བདང་བ་ང་ལ་ཐེ་ཚོམས་ཡོད་ལོ།
མདའ་འཕུད་བདང་ང་མི་འཕུད་ཐེ་ཚོམས་ཡོད་ལོ།
མདའ་བདངས་པ་ནས་ཕར་ལ་མི་ཕོག་ཙམ་མེད་ལོ།
ཕོག་པ་ནས་ཕར་ལ་མི་ཤི་ཙམ་མེད་ལོ།
ཤི་པ་ནས་ཕར་ལ་དཀྲུལ་བ་ལ་ཆེན་ལོ།
ཉིད་ཀྱིས་བསམས་པ་བདང་སྟེ་མོ་ཞིག་དོན་ལོ།

རྒྱལ་བུ་ལ་མཛེས་པའི་ཛོ་ ཛོ་ག་ན་འདུག་གཟིགས་ལོ།
དེ་ཟུག་གཟིགས་དེ་ང་ལ་གདམ་ལན་ཞིག་དང་ལོ།
ང་ནི་ཚོན་ལ་ཡོངས་མཁན་ཞིག་མིན་ལོ།
རྒྱལ་ལྷམ་ཀ་སར་གྱི་ཏུ་ཀུས་ལ་ཉན་དེ་ཡོངས་པ་ཡིན།
ང་ནི་ཕྲུ་གུ་ཞིག་འདུག་མ་ཟམས་ལོ།
ཁོག་སྟོད་བཅད་དེ་སྟེང་ལྷ་ཡུལ་ལ་ཕང་ཡིན།
ཁོག་དཀྱིལ་བཅད་དེ་བར་བཙན་ཡུལ་ལ་ཕང་ཡིན།
ཁོག་སྨད་བཅད་དེ་འོག་ཀླུ་ཡུལ་ལ་ཕང་ཡིན།

དེ་ཟུག་ཟེརས་པ། ཨེ་མེ་འཛིག་སྟེ། མགྲོགས་པ་སྒྲོ་ལ་བིང་སྟེ་ཡོང་སྟེ། ཕྲུ་གུ་ནང་ལ་ཁྲིར་དེ། ཕེ་ཞིག་དང་ཝུག་སིངས་ཤིག་བདང་སྟེ་བོར་དེ། དེ་ནས་ཕྲུ་གུས་གླིང་ཡུལ་ནས་ཀ་སར་གྱིས་བཀལ་མཁན་གྱི་ཡི་གེ་ཕིང་སྟེ་མི་མི་ལ་བདངས་པ། མི་མིས་ཡི་གེ་སིལ་ཏེ་ཏ་གོ་སྟེ། མགྲོགས་པ་ཁ་ཐོག་ལ་སོང་སྟེ། སྟེང་ལྷ་ཡུལ་ལ་གསངས་བདངས། བར་བཙན་ཡུལ་ལ་གསངས་བདངས། འོག་ཀླུ་ཡུལ་ལ་གསངས་བདངས། མོ་དཔེ་བཏིང་སྟེ་མོ་ཞིག་བདབས། མོ་འི་ནང་ནས་ཅི་བིང་མཁན་ཚང་མ་ཁོ་ལ་གླུ་ཞིག་འདི་ལྟར།

གླིང་གི་གླིང་ཕྲུག་ཁྲིད་དངོས་ལ་ཉོན་ལོ།
གླིང་གི་ཁུང་ཕྲུག་བདག་ལ་གསན་ལོ།
ངས་འང་མོ་ཞིག་བདབས་ལོ།
ངས་འང་རྩིས་ཤིག་བསྐོརས་ལོ།
གླིང་མཁར་ནས་སོང་སྟེ་བྲག་ནག་པོ་ཞིག་ཡོད་ལོ།

བྲག་ནག་གི་སྟེང་ན་བྲག་དམར་ཞིག་ཡོད་ལོ།
བྲག་དམར་གྱི་སྟེང་ན་བྲག་དཀར་ཞིག་ཡོད་ལོ།
བྲག་དཀར་པོའི་སྟེང་ན་ལྷ་ན།
འགྲོ་ཡུལ་གཞུང་ཀུན་མཐོང་ཆེན་ལོ།
འགྲོ་ཡུལ་གཞུང་ན་ཤེལ་གྱི་མཁར་ཞིག་ཡོད་ལོ།
ཤེལ་མཁར་དེའི་ནང་དུ་ཛོ་ཛོ་ཞིག་འཁྲུང་ཆེན་ལོ།
ཤེལ་མཁར་དེའི་ནང་དུ་ཤེལ་ལྷང་ལྷ་མོ་སྐྱེ་ཆེན་ལོ།
ཛོ་ཛོ་འཁྲུངས་པ་ལོ་སྟོང་དང་ལྔ་བཅུ་ཡོད་ལོ།
ཤེལ་ལྷང་མ་འཁྲུངས་པ་ལོ་སྟོང་དང་ལྔ་བཅུ་ཡོད་ལོ།
བྱ་དབང་ལྡན་དབང་ཕྱུག་གི་བུ་མོ་ཞིག་ཡིན་ལོ།
ཛོ་ཛོའི་མགོའི་ཁ་ནུར་བུ་བཏེམ་ཁྲིལ་ཞིག་ཡོད་ལོ།
ཞལ་ལ་པད་མའི་མེན་ཏོག་ཡས་སེད་ལོ།
སྐྱིད་ལ་ནུར་བུ་བཏེམ་ལྷུག་ཡོད་ལོ།
དེ་ནི་མི་ཡུལ་བཀུག་པའི་བཀུག་ལྷུག་རིག་ཡིན་ལོ།
དཔུང་པ་གཡས་པའི་ཁ་ན་ཉི་མ་ཤར་རེད།
དཔུང་པ་གཡོན་པའི་ཁ་ན་ཟླ་བ་ཤར་རེད་ལོ།
ཞབས་ལ་ཀླུ་བདེར་བ་ནག་པོ་གནས་དེ་ཡོད།
མི་ཡུལ་ཀུན་ལ་ཟན་གྱི་དངོས་གྲུབ་ཡོང་ཆེན་ལོ།
དེ་བོ་རྒྱལ་བུའི་གྲོག་སྐལ་ཡིན་ལོ།
དེ་ཀུན་རྒྱལ་ས་དཀར་པོའི་མདུན་ས་རིག་ཡིན་ལོ།
ཡར་ངོའི་བཅོ་ལྔ་གང་བའི་ཞག་ལ་སོང་ཟེར།

མར་ངོ་འི་ཟླ་བ་གང་བའི་ཞག་ལ་སྐྱོད་ཟེར།
ཡར་དཀོན་མཆོག་ལ་མཆོད་པ་ཕུལ་དེ་སོང་ཟེར།
མར་ངན་སོང་ལ་སྦྱིན་པ་བཏང་སྟེ་སྐྱོད་ཟེར།
ཀ་སར་རང་དང་རྒྱལ་བུ་རང་སོང་ཟེར།
འགྲོ་ཡུལ་ཡི་ཡུལ་མཛུག་ལ་ཨ་བི་ཚམས་མཁན་མོ་ཞིག་ཡོད་ལོ།
ཁྲོ་འི་སྟར་བྲང་ས་ལ་འདུག་ཟེར།
རྫིང་ན་དཔའ་བོ་གཅིག་དེ་ཙུ་ཤི་ཡིན་ལོ།
མདའ་དཔོན་གོང་མ་དེ་ཙུ་ཤི་ཡིན་ལོ།
རི་བོ་སྔོན་ཆེན་གྱི་ལག་དུ་ཤི་ཡིན་ལོ།
དཔའ་བོ་ཤི་ནའང་ཛེ་ཛེ་ཐོབ་ཡིན་ལོ།
མདའ་དཔོན་གྲོངས་ནའང་། ཤིལ་ལྷང་ལྷ་མོ་ཐོབ་ཡིན།

དེ་ཟླུག་ཟེརས་པ་སང། བུང་ཕྲུག་དེ་ཕྱིར་ལོག་སྟེ་གླིང་ཡུལ་ལ་ཡོང་ནས། ཧ་དེ་ཚིབས་རའི་ནང་ཁྲིར་དེ། ཚིབས་དཔོན་ལག་དུ་བཏང་སྟེ། ཁོ་རང་ཀ་སར་རྒྱལ་པོ་འི་མདུན་ལ་སོང་སྟེ། མེ་མེ་སློབ་དཔོན་གྱིས་ཟེར་མཁན་ཚང་མ་ཞུས་པ་སང། དེ་ཟླུག་ཚོར་དེ་ཛེ་ཛེ་འབྲུ་གུ་མ་ལ་སྤོ་ཡོང་སྟེ། ཀ་སར་རྒྱལ་པོ་ལ་གདམ་ལན་གླུ་ཞིག་བཏངས་སོ།

རྒྱལ་པོ་ཉིད་ཀྱིས་དངོས་ལ་ཉོན་དང་།
ཀ་སར་ཉིད་ཀྱིས་བདག་ལ་གསན་ལོ།
བུ་མོ་ང་རང་ཡང་ཡབ་བསྟན་པའི་བུ་མོ་ཡིན་ལོ།
འབྲུ་གུ་མོ་ང་རང་ཡུམ་སྟོན་མོ་འི་བུ་མོ་ཡིན་ལོ།
ངས་འང་གླིང་མཁར་ནོན་དེ་འདུགས།

རྒྱལ་པོ་འི་མདུན་མ་ལ་མཛེས་དེ་འདུགས།
ཉི་རང་འགྲོ་ཡུལ་ལ་མ་སྐྱོད་ལོ།
དབུ་ལ་སྐྲ་དཀར་དཀར་པོ་སོང་སྟེ་འདུག།
མིག་ལྤགས་ཆར་དེ་ཁ་ལྤགས་ལ་སླེབ་སྟེ་འདུག།
ཁ་ལྤགས་ཆར་དེ་འབྲང་ལ་སླེབ་སྟེ་འདུག་ལོ།
ད་མགོ་ལ་བར་ཞྭ་གོན་ལོ།
སྐྱེ་ལ་ཕྲེང་བ་ཁྲུར་ལོ།
ལག་པ་ལ་མ་ཧི་ཁྲུར་ལོ།
ལོ་གསུམ་མཚམས་ལ་འདུག་ལོ།
བདུད་ཡུལ་ལ་མ་ཆ་ལོ།
ཤེལ་ལྷང་ལྷ་མོ་མི་ཁྲོང་ལོ།
རྒྱལ་བུ་ལ་བག་མ་འདི་ནས་འཁྲོང་ཡིན།
ཁང་པ་ཕལ་ཕལ་གྱི་བུ་མོ་ཞིག་འཁྲོང་ཡིན།
ཁང་བདག་ཆེན་མོ་འི་བུ་མོ་ཞིག་འཁྲོང་ཡིན།
དེ་ཟུག་ཟེརས་པ། རྒྱལ་བུ་ལ་སྤྲོ་ཡོང་སྟེ་གླུ་ཞིག་བཏངས་སོ།
ཨབ་བསྟན་པའི་བུ་མོ་ཁ་དམར་མོ།
ཡུམ་སྟོན་མོའི་བུ་མོ་ལྷུ་དམར་མོ།
ཞིམ་པོ་ཟེས་པའི་ཚོལ་སོགས་མོ།
ལགས་མོ་གོནས་པའི་སྲང་གྲིང་མོ།
ཁྲོད་རིས་ནོན་ནོན་ཅི་ཀུན་ནོན་ལོ།
ངའི་གླིང་མཁར་ཤལ་མ་ལ་འགྲུར་བཙུགས།

གླིང་གི་ཤ་སྙིང་དོར་གྲིས་ཟློས།
གླིང་གི་མར་སྙིང་དོར་གྲིས་ཟློས་ལོ།
དུང་གི་སྒྲིད་བུ་དོར་ཡུལ་ལ་བསྐྱིབ་བཙུགས།
ཧ་ཕོ་ཁ་ལ་མེ་བར་དོར་ཡུལ་ལ་བསྐྱིབ།
ཕོ་ལད་གྲད་གཞུ་དོར་ཡུལ་ལ་བསྐྱིབ།
ཨ་བ༹་འབྲུ་དམར་ལམ་བསྟན་དོར་ལ་བསད་བཙུགས།
ཨང་གར་ལངས་པ་བཙོན་ལ་བདང་བཙུགས།
ཙ༹
ཁྲོད་ཁ་དམར་མོ་དོར་དང་མཉམ་པོ་བྲང་སྟེ་སོང་།
ཁྲོད་ལ་ནོན་ནོན་ཅི་ནོན་པིན།
འཁྲུང་ཡིན་ལྷ་འཁྲུང་ཡིན་ཤེལ་ལྷང་ལྷ་མོ་འཁྲུང་ཡིན།
ཆེན་དོ་ལྷ་ཆེན་བདུད་ཡུལ་གཞུང་ལ་ཆེན།
ཆེན་དོ་ལྷ་ཆེན་འགྲོ་ཡུལ་གཞུང་ལ་ཆེན་ལོ།

རྒྱལ་བུས་དེ་ཟུག་ཟེར་བས་པ། ཛོ་ཛོ་འབྲུ་གུ་མ་སོང་། དེ་ནས་ཕ་བུ་གཉིས་ཀ་ཡར་ངོ་འི་བཙོ་ལྔ་གང་བའི་ཞག་ལ། མར་ངོ་འི་ཟླ་བ་གང་བའི་ཞག་ལ། འགྲོ་ཡུལ་ལ་ཅ་ཅེས་སོང་སྟེ། ཧ་རྒྱུང་གོད་དབྱེར་པ་ལ་ཨ་བ༹་ཞོན་དེ། གོད་མ་ཆ་ལངས་ལ་བུ་ཆ་ཞོན་དེ་སོང་། དཔལ་མོ་འི་ཨ་སྟག་དང་། དཔལ་ལེ་གོད་པོ་གཉིས་ཀ་ལམ་བཙུག་པར་སོང་། མིག་མཐོང་ཞིག་སོང་སྟེ་ཁོང་ལོག་སྟེ་ཡོངས། ཁོང་ཕ་བུ་གཉིས་ཐང་ཞིག་གི་ཁ་བསྐྱིབ་པ། དེའི་ཐང་དཀྱིལ་ལ་ཤིང་རྒྱལ་གཅིག་ཡོད་ཚག། དེ་རུ་ཁོང་དགོངས་ལ་ལུས་པ། ཤིང་རྒྱལ་པའི་ཁ་ཕོ་ཕོ་རིག་གཅིག་དང་། མོ་མོ་རིག་གཅིག་ཡོད་ཚུག། ཁོང་ལ་ཕྲུ་གུ་མང་པོ་སྐྱེ་སྟེ། ཤིང་རྒྱལ་ལི་ལྷུག་

གུ་རི་ཁ་ཐྲུ་གུ་རི་རི་ཡོད་ཙུག། མོ་མོ་རོག་གིས་ཟེར། ལྷ་ཕོ་ཕོ་རོག་ང་དང་གཉིས་ཀ་འགྲོ་ཡུལ་ལ་ཆེན་ཟེར་བ། ཕོ་ཕོ་རོག་གིས་གླུ་ཞིག་བཏངས་སོ།

ལྷ་མོ་མོ་རོག་གིས་དངོས་ལ་ཉོན་དང་།
ང་དང་འགྲོ་ཡུལ་ལ་མི་ཆ་ལོ།
ཤིལ་ལྷང་ལྷ་མོ་ལྷམས་པ་ལ་ལོ་སྟོང་དང་ལྷུ་ཙུ་ཡོད་ལོ།
གླིང་ཡུལ་ནང་འགྲོ་ཡུལ་ཡི་བར་ལ་ལམ་ཐག་རིང་ཡོད།
ཁྱེད་བུ་མོ་དེ་ཉེ་ཁ་མི་ཉན་ཞིག་ཡོད་ལོ།
ཁྱེད་ཞག་ངན་པ་ལ་སྐྱེས་མཁན་མོ།
སྐར་མ་ངན་པ་ལ་སྐྱེས་མཁན་མོ།
ང་དང་འགྲོ་ཡུལ་ལ་མི་ཆ་གླིང་ཡུལ་ལ་ཆེན་ལོ།
མར་རི་ཛ་ག་ཐབ་བེད་ལོ།
ཤའི་ཤལ་མ་ཐབ་ཆེན་ལོ།

དེ་ནས་ནམ་ལང་སྔེ་ན། ཕོ་རོག་གཉིས་ཀ་གླིང་ཡུལ་ཕྱོགས་ལ་སོང་། ཁྱི་ཕ་བུ་གཉིས་ཀ་འགྲོ་ཡུལ་ཕྱོགས་ལ་སོང་ངོ། ལམ་གྱི་ཆེ་ཀུ་འདིན་ཞིག་སོང་སྟེ་ཁྱིང་ལམ་ཁྱེད་ལ་བསྐྱེབ་པས། འགྲོ་ཡུལ་ལ་ཛོ་ཛོ་སྐྱེ་ཙེས་སི་ཏྲུ་མེད་པ་སང། རྒྱ་ནག་པའི་ཇོ་པ་བསྐྱེབ། གུ་གུ་གཡུའི་རྒྱལ་པོའི་ཇོ་པ་བསྐྱེབ། སྟག་གཟིག་ནོར་གྱི་རྒྱལ་པོའི་ཇོ་པ་བསྐྱེབ། མཐེམ་བདག་གི་རྒྱལ་པོ་འི་ཇོ་པ་བསྐྱེབ། ཤར་གྱི་ཇོ་པ་བསྐྱེབ། ནུབ་ཀྱི་ཇོ་པ་བསྐྱེབ། ལྷོ་འི་ཇོ་པ་བསྐྱེབ། བྱང་གི་ཇོ་པ་བསྐྱེབ། སྟེང་ལྷའི་ཇོ་པ་བསྐྱེབ། བར་བཙན་གྱི་ཇོ་པ་བསྐྱེབ། འོག་ཀླུའི་ཇོ་པ་བསྐྱེབ་སྟེ་ཡོད་ཙུག། ཁྱིང་ཚང་མཛོ

ཇོ་མ་བལྟམས་པའི་སྔོན་དུ་བསླེབ་སྟེ་ཡོད་པས། རྒྱ་ནག་པ་རྩིས་ལ་མཁས་པའི་མི་གཅིག་ཡོད་པས། ཁོའི་རྩིས་ནང་ན། གླིང་མཁར་སྟོད་ནས་ཏུ་མི་བཞི་ཡོང་འདུག། ང་དང་གིས་ཁོང་ལ་གདམ་ལན་ཅིའང་མི་ཟེར་ཙམ་ཀྱི་ཁ་ཆད་བཅོས་དེ་འདུགས། ཁྲིའི་མདུན་ལ་རྟ་བདངས། ཏུའི་མདུན་ལ་ཙུས་པ་བདང་སྟེ་བོརས། དེ་ནས་ཀ་སར་དང་རྒྱལ་བུ་གཉིས་ཀ་འགྲོ་ཡུལ་གྱི་མཇུག་ལ་ཨ་བིའི་མདུན་ལ་བསླེབ་སོང་། ཨ་བིས་ཟེརས་པ། ལྷ་མི་ཡུལ་ལི་སྲིན་བུ་ཁྱོད་གང་ནས་ཡོངས། འདི་ཡུལ་ལ་ཡོང་བཅུག་ག་མེད་ཟེརས་པ། ཁོང་གིས། ང་ཞ་ཨ་བི་རང་གི་ནང་དུ་བྲང་ས་ལ་བོར་དེ། ངའི་ཨ་བཱ་ཀྲད་པོ་ལ་ཆུ་ཞིག་དོང་། ཨ་བི་རང་ལ་གསེར་རི་དི་ལ་ཞིག་བདང་ཡིན་ཟེརས་པ། དེ་ནས་ཨ་བིས་ཟེརས། ངའི་ཚས་སི་ནང་དུ་ར་མ་ཞིག་ཡོང་མ་བཅུག། ང་ཆུ་འཁྱོང་བ་ཆེན་ཟེརས་པ། ཁོང་གིས་ཟེརས། ཚས་ང་ཙམ་སྤྲུང་ཡིན་ཟེརས་པ། ཨ་བི་ཆུ་ལ་སོང་སྟེ་སླེབ་སླེབ་ལ། རྒྱལ་བུས་ཨ་བིའི་ཚས་ཚང་མ་ལ་མེ་དུགས་ནས། མེ་ཏོག་དང་ཚོད་མ་ཚང་མ་ཐལ་བལ་གྱུར་དེ་ཡོད་ཚུག། ཨ་བི་བསླེབ་སྟེ་ནཁོ་ལ་ཁ་སྐྱེ་སྟེ་ཟེརས། ངའི་ཚས་ལ་མེ་དུག་མཁན་ཁྱོད་གནས་ཡོངས། ངའི་ཟས་ཀྱི་དོན་ཡང་འདི་བོ་ཡིན། ངའི་གོས་ཀྱི་དོན་དེ་བོ་ཡིན་ཟེར་རིན་ཞིག་ཨ་བི་ཏུས་སོང་། གླིང་ཕྲུག་གིས་ཟེརས་པ། ཨ་བི་ཧུ་འཧུ་ད་ཙུང་ཆུ་ཞིག་ཁྱོང་། ངའི་ཨ་བཱ་ཀྲད་པོ་མ་ངོམས་ཟེརས་པ། ཨ་བིས་ཁ་སྐྱེ་འིན་ཞིག་སང་ཆུ་ཞིག་ཁྱོང་བ་སོང་། ཨ་བི་ཡོང་ཡོང་ལ། ཚས་ཚང་མ་སྔོན་མའི་མཆོགས་སོང་སྟེ་ཡོད་ཚུག། དེ་ཟུག་སྔོང་སྟེ་ཨ་བི་འཐད་སོང་། དེ་ནས་ཏུ་ལ་རྟ་བདངས། མི་ལ་བྲང་སྐ་བཅོས་དེ་ནང་ལ་ཁྱེར་དེ་ཛ་སློམ་དེ་བདངས། ཨ་བིས་མེ་དོག་ཙོ་པོ་གང

ཁྲུར་དེ་བ་ཟཱར་ལ་འཚོང་བ་ལ་ཁྲིརས་པ། མེ་ཏོག་ཅེ་པོ་གང་ལ་རིན་གསེར་ཁྲི་གང་ཐོབ་སོང་། དེན་ན་ཞག་གི་མཚན་ལ་ཇོ་ཇོ་བལྟམས་པས། མི་ཡུལ་འོད་ཀྱིས་ཁྲུངས། རྒྱལ་བུ་ལ་རྨི་ལམ་མཐོང་སྟེ་ཨ་བཱ་ཀེ་སར་ལ་གླུ་ཞིག་འདི་ལྟར་བདངས་སོ།

འདི་རིང་གཉིད་དིས་རྨི་ལམ་དེ་ངན་པ་ཞིག་མཐོང་ཨ་བཱ།
མཚན་ངན་གཉིད་དིས་རྨི་ལམ་ངན་པ་ཞིག་མཐོང་ལོ།
འདི་ཡུལ་ལི་མགོ་ལ་བྲག་དཀར་ཞིག་འདུག་ལོ།
བྲག་དཀར་པོ་འི་སྟེང་དུ་བྲག་དམར་པོ་ཞིག་འདུག་ལོ།
བྲག་དམར་པོ་འི་སྟེང་ན་བྲག་ནག་པོ་ཞིག་འདུག་ལོ།
བྲག་ནག་པོ་འི་སྟེང་ན་སྤྲིན་མཁར་ཞིག་འདུག་ལོ།
སྤྲིན་མཁར་གྱི་ནང་ན་སྤྲིན་མོ་ཞིག་སྐྱེ་བ་ལ་མཐོང་ལོ།
སྤྲིན་མོ་འི་མགོ་འི་དཀྱིལ་ན་མེ་ཆེན་ཞིག་འབར་ར་མཐོང་ལོ།
མེའི་མེ་ལྕེ་དེ་སྟེང་ལྷ་ཡུལ་ལ་ཡོག་པ་མཐོང་ལོ།
དབང་པོ་རྒྱབ་བཞིན་གྱི་ཕོ་བྲང་ལ་ཡོག་པ་མཐོང་ལོ།
ཁོ་འི་སྦུང་པ་ན་དུད་ཆེན་ཞིག་ཤིང་བ་མཐོང།
དུད་པའི་ཁག་ལྷང་དེ་འོག་གི་ཀླུ་ཡུལ་ལ་ཆ་ལ་མཐོང།
ཀླུ་རྒྱལ་ལྡོག་པོ་འི་ཕོ་འབྲང་ལ་ཡོག་པ་མཐོང།
ཁྱོ་འི་ཁ་ལ་ལྕེ་གུ་ནག་པོ་ཞིག་འཁུར་རེ་འདུག།
ལྕུག་གི་ཁག་ལྷང་བར་བཙན་ལ་ཆ་ལ་མཐོང་ལོ།
ཨ་མ་སྐྱབ་མདུན་མའི་ཕོ་འབྲང་ལ་གནོད་དེ་འདུག།
ཁོ་འི་སྙིང་པ་ལ་དུག་སྦྲུལ་ནག་པོ་འཁྲིལ་དེ་འདུག།

དུག་སྦྲུལ་ཡི་ཁག་སྣང་པོ་གསེར་པོ་འདི་གསེར་རི་ལ་ཕོག་པ་མཐོང་ལོ།
སྲིན་མོ་འདི་ཀང་འོག་ལ་བོང་བུ་ནག་པོ་ནན་དེ་འདུག།
བོང་བུའི་ཁག་སྣང་པོ་གླིང་མཁར་ལ་གནོད་དེ་འདུག
ཕས་ལྷ་ཀྱེར་རྫོང་སྟན་པོ་ལ་གནོད་དེ་འདུག།
མས་ལྷ་བཀུར་དམན་རྒྱལ་མོ་ལ་གནོད་དེ་འདུག།
འདིའི་ཡུལ་ལ་སྲིན་མོ་ཞིག་སྐྱེ་སྡེ་འདུག།
འདིའི་ཡུལ་ལ་མི་འདུག་ལོག་སྡེ་ཆེན།
རང་སྐྱོག་འཁུར་དེ་རང་ཡུལ་ལ་ལོག་སྡེ་ཆེན།

ཕྲུ་གུས་དེ་ཐུག་ཟེརས་པ། ཨ་ཕི་མགྲོགས་པ་ལངས་དེ། འདྲི་དོན་བཏངས། ཕོག་དོན་བཏང་སྟེ། ཕྲུ་གུའི་སྐས་མགོ་ལ་སོང་སྟེ་གླུ་ཞིག་བཏངས་སོ།

ཨ་ཕི་བའི་ཚ་བོ་དངོས་ལ་ཉོན་དང།
གླིང་གི་རྒྱལ་བུས་བདག་ལ་གསན་ལོ།
ཀྱི་ལམ་ངན་པ་མ་ཡིན་བཟང་པོ་རིག་ཡིན་ལོ།
འབྲག་དཀར་པོ་མ་ཡིན་ནག་པོ་རིག་ཡིན་ལོ།
དེའི་སྟེང་དུ་དམར་པོ་ཞིག་ཡིན་ལོ།
དེའི་སྟེང་དུ་དཀར་པོ་ཞིག་ཡིན་ལོ།
སྲིན་མཁར་མ་ཡིན་ཤེལ་མཁར་ཡིན་ལོ།
སྲིན་མོ་མ་ཡིན་ལྷ་མོ་ཞིག་ཡིན་ལོ།
བདུད་མོ་མ་ཡིན་ཤེལ་ལྷང་ལྷ་མོ་ཡིན་ལོ།
མགོ་ལ་མེ་ཆེན་འབར་བ་མེད། ནུར་བྲུ་ཁྲིམ་མཚོད་ཡིན།

སྤྲུང་པ་ནས་དུད་ཆེན་ཞིང་བ་མེན། ཉི་མ་ཤར་བ་ཡིན།
ཁ་ལ་ལྡུ་གུ་ནག་པོ་མེན། པད་མའི་མེ་ཏོག་ཡིན།
སྐྱེད་ལ་དུག་སྦྲུལ་ནག་པོ་མེན། མི་ཡུལ་ཀུག་ལྷུག་ཡིན།
ཞབས་འོག་ལ་བུང་བུ་ནག་པོ་མེན། སྨུ་དོར་བ་ནག་པོ་ཡིན།
མི་ཡུལ་ཀུན་ལ་ཟན་གྱི་དངོས་གྲུབ་ཡོང་ཡིན།
ཨ་ཞིའི་ཚ་བོ་བསོད་བདེ་ཅན་ལོ།
གླིང་གི་རྒྱལ་བུ་བསོད་ནམས་ཅན་ལོ།
མདང་ཡོང་སྤེ་འདི་རིང་ཤེས་ལོ།
རྒྱ་ནག་རྒྱལ་པོ་འི་ཉོ་པ་བསླེབ་སྤེ་ཡོད།
མདུན་ལ་རིན་མཐོ་འཁུར་དེ་ཡོད།
ཇོ་ཇོ་བརླམས་པའི་ཁ་བར་མེད་ལོ།
གྲུ་གུ་གཡུའི་རྒྱལ་པོ་འི་ཉོ་པ་བསླེབ་སྤེ་ཡོད
མདུན་ལ་རིན་མཐོ་འཁུར་དེ་ཡོད།
ཇོ་ཇོ་བརླམས་པའི་ཁ་བར་མེད་ལོ།
སྟག་གཟིག་ནོར་གྱི་རྒྱལ་པོ་འི་ཉོ་པབསླེབ་སྤེ་ཡོད།
མདུན་ལ་རིན་མཐོ་འཁུར་དེ་ཡོད།
ཇོ་ཇོ་བརླམས་པའི་ཁ་བར་མེད་ལོ།
ས་ཐེམ་བདག་གི་རྒྱལ་པོ་འི་ཉོ་པ་བསླེབསྤེ་ཡོད།
མདུན་ལ་རིན་མཐོ་འཁུར་དེ་ཡོད།
ཇོ་ཇོ་བརླམས་པའི་ཁ་བར་མེད་ལོ།
ཤར་གྱི་ཉོ་པ་བསླེབ་སྤེ་ཡོད།

ཇོ་ཇོ་བལྟམས་པའི་ཁ་བར་མེད།
ནུབ་ཀྱི་ཉོ་པ་བསླེབ་སྟེ་ཡོད།
ཇོ་ཇོ་བལྟམས་པའི་ཁ་བར་མེད།
བྱང་གི་ཉོ་པ་བསླེབ་སྟེ་ཡོད།
ཇོ་ཇོ་བལྟམས་པའི་ཁ་བར་མེད།
ལྷོ་འི་ཉོ་པ་བསླེབ་སྟེ་ཡོད།
ཇོ་ཇོ་བལྟམས་པའི་ཁ་བར་མེད།
སྟེང་ལྷ་འོག་ཀླུ་བར་བཙན་གྱི་ཉོ་པ་བསླེབ་སྟེ་ཡོད།
ཇོ་ཇོ་བལྟམས་པའི་ཁ་བར་མེད།

དེ་ནུབ་ཟེར་དེ་ན་གཉིད་ལོག་སོང་། དེ་ནས་ཇོ་ཇོ་ཤེལ་ལྷང་མོ་ལ་རྨི་ལམ་མཐོང་སྟེ་ཨ་མ་ལ་གླུ་ཞིག་བཏངས་སོ།

བུ་མོ་འི་ཨ་མས་དངོས་ལ་ཉོན་ལོ།
ལྷ་མོ་འི་ཡུམ་ཆེན་བདག་ལ་གསན་ལོ།
བུ་མོ་ང་ལ་རྨི་ལམ་ཞིག་མཐོང་ལོ།
གླིང་མཁར་སྟོད་ནས་ཏ་པ་ཞིག་ཡོང་བ་མཐོང་ལོ།
དེ་སང་ཉིང་ན་ཏ་པ་ཞིག་འདུག་ལོ།
སྔོན་མ་མི་ལ་བལྟ་ན་སྨ་ར་སྨྲུ་རེ་ཞིག་འདུག་ལོ།
འོག་གི་ཏ་ལ་བལྟ་ན་རྐྱང་རྒོད་ཅིག་འདུག་ལོ།
དེ་སང་ཉིང་མ་དེ་ཕྲུག་ཞིག་འདུག་ལོ།
ཏ་ལ་བལྟ་ན་རྒོད་མ་ཞིག་འདུག་ལོ།
གྲིབ་མགལ་ལ་བོར་ནཁྲུགས་ཙམ་འདུག་ལོ།

ཉི་མ་ལ་བོར་ན་ཞུ་ཙེས་རིག་འདུག་ལོ།
གསེར་གྱི་ཙུན་ཙུན་པོ་དཔུང་ཁོར་ལ་འདུག་ལོ།
དངུལ་གྱི་ཙུ་ཧྲི་སྐྱེད་ཁོར་ལ་འདུག་ལོ།
དེའི་རྫིང་ན་ཡང་ཧྲ་པ་ཞིག་འདུག་ལོ།
ཁ་ནི་གཡས་ལྷོར་གཡོན་ལྷོར་ལ་འདུག་ལོ།
གཡས་སླ་གཡས་ལ་འདུག་ལོ།
གཡོན་སླ་གཡོན་ལ་འདུག་ལོ།
རྐེ་བ་གཅིག་གཉམ་ལ་འདུག་ལོ།
ཆེ་བ་གཅིག་ཉི་ས་ལ་འདུག་ལོ།
ནུ་མ་གཅིག་དེ་སྐྱེད་པ་ལ་སྦྲིལ་ཏེ་འདུག་ལོ།
ནུ་མ་གཅིག་དེ་མཛིང་བ་ལ་སྦྲིལ་ཏེ་འདུག་ལོ།
ལག་པ་གཡས་པ་ལ་མདུང་འཁུར་ཏེ་འདུག་ལོ།
མདུང་དཔལ་འཛམ་རིང་མོ་འཁུར་ཏེ་འདུག་ལོ།
མདུང་ལྩེ་དེ་བུ་མོ་ང་རང་ལ་གནོད་པ་མཐོང་ལོ།
སླ་ལོ་ལ་མདུང་སྦྲིལ་བདང་སྤེ་ཁྲེར་བ་མཐོང་ལོ།

དེ་ཟུག་ཟེརས་པ་སང། ཨ་མས་བུ་མོ་ལ་ཡང་གླུ་ཞིག་བདངས་སོ།

ཨ་མ་བའི་བུ་མོས་དངོས་ལ་ཉོན་ལོ།
ཞིལ་ལྷང་ལྷ་མོས་བདག་ལ་གསན་ལོ།
སྨི་ལམ་ངན་པ་མེན་བཟང་བོ་རིག་ཡིན་ལོ།
སྤུན་མ་ཧྲ་པ་དེ་ཛེ་ཛེ་རང་གི་ཨ་བ་ཡིན་ལོ།
དེ་ནི་གླིང་ཀ་སར་རྒྱལ་པོ་ཡིན་ལོ།

འོག་གི་ཧྲ་དེ་ཀྱུང་ཀོད་དབྲེར་པ་ཡིན་ལོ།
དེ་སང་ཉིང་མ་ཧྲ་པ་དེ་རྒྱལ་བུ་རྒྱལ་ས་དཀར་པོ་ཡིན་ལོ།
དེ་ཉི་ཛོ་ ཛོ་ཉེ་རི་སྨྲོགས་སྐྱལ་ཡིན་ལོ།
དེ་སང་ཉིང་མ་ཧྲ་པ་དེ་ཉི་དཔལ་མོ་འི་ཨ་སྤྱག་ཡིན་ལོ།
ཀེ་སར་རྒྱལ་པོ་འི་བཙུན་མོ་ཡིན།
ཀེ་སར་རྒྱལ་པོ་འི་དཔུང་སྨྲོགས་ཡིན།
ཛོ་ ཛོ་ཉེ་རང་གི་ཨ་མ་ཡིན།
སྨི་ལམ་ངན་པ་མ་ཡིན་བཟང་པོ་ཡིན།

དེ་ཧྲུག་ཟེརས་པ་སང། ཛོ་ ཛོས་ཡིད་མ་ཆེས་པ་འདུགས། རྒྱལ་བུ་རྒྱལ་ས་དཀར་པོ་དེས་ཀོད་མ་ཚ་ལངས་ལ་སྐྱ་ཆ་བསྟུད་དེ། གྲོ་ཕྱུལ་གཞུང་ལ་ལྷུལ་སོང་བས། ལྷ་མོ་འི་ལིའི་བ་ཟཱར་ལ་ཀོད་མ་ཚ་ལངས་ལ་ཞོན་དེ་ཆ་མ་ཐུབ་པ་ལོག་སྟེ་ཡོངས། དེ་ནས་ཀོད་མ་བྲིས་ལ་བདག་སྟེ་ན། ཨ་བཱ་ཀེ་སར་ལ་ཞུ་ཕྱུལ་ཞིག་གླུ་འདི་ལྟར་བཏངས་སོ།

ཨ་བཱ་རང་མཁྱེན་ལོ་ཀེ་སར་མཁྱེན་ལོ།
ལྷ་མོ་འི་བ་ཟཱར་དེ་ལི་འི་འདུག་ལོ།
ཀོད་མ་ཚ་ལངས་ལ་ཞོན་དེ་ལིའི་བ་ཟཱར་ལ་ཆ་མི་ཐུབ།
ཞུ་ནི་མི་ཐུབ་པའི་ཞུ་བ་ཞིག་ཕྱུལ་ཡིན།
ཐུ་ཙུ་ཀྱུང་ཀོད་དབྲེར་པ་ང་ལ་ཕོ་ཐབས་ལ་སྐུལ་ལེ།
ཀྱུང་ཀོད་དབྲེར་པ་མེད་ན་ལིའི་བ་ཟཱར་འཆག་མི་ཐུབ།
ཨ་བཱ་ཉིད་ལ་ཕྱག་སྒྲོམ་སྐྱིད་དེ་ཐུ་ཙུ་ཕོ་ཐབས་མཛད་ལོ།

དེ་ཟུག་ཟེརས་པ་སང། རྒྱལ་པོ་ཀེ་སར་ལ་སྨོ་ཡོང་སྟེ་བུ་ཚ་ལ་གཏམ་ལན་གླུ་ཞིག།

ཨ་ཕ་མེད་ཕྲུ་གུས་དངོས་ལ་ཉེན་དང།
རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན་ལོ།
དེན་འདྲ་ཕྲུ་གུ་ཕོ་སོ་ཅན།
ཕ་མེད་ཕྲུ་གུ་ཕོ་སོ་ཅན།
མི་མ་ཤི་བ་མཛུ་གུ་བཙན་ཡིན་ན།
ཧ་མ་ཤི་བ་སྨོག་འབྲག་ཡིན་ན།
ཁྱོད་ཚུར་ཚུར་མ་ཡོང་ཕར་ཕར་སོང་ལོ།
ཁྱོད་ལ་ཐུར་ཏུ་བདང་འདོགས་མེད།

དེ་ཟུག་ཟེར་དེ་རྒྱལ་པོ་ཀེ་སར་ནང་ལ་སོང་སྟེ་དཔེ་ཆ་ལ་བལྟས་པ། དཔེ་ཆའི་ནང་ནས་ཕྲུ་ཏུ་ཀྱང་སྒོད་དབྱེར་པ་རྒྱལ་བུ་ལ་བདང་རན་སོང་སྟེ་ཡོད་ཚུག་པས། རྒྱལ་པོ་ཀེ་སར་ཁོ་རང་གིས། མགོ་ལ་བར་ཞྭ་གཞོན་དེ་འདུག་ཅེས་ལ་རན་དེ་ཡོད་ཚུག་སྐྱེ་ལ་ཕྲེང་བ་འཁུར་བའི་དུས་རན། ལག་པ་ལ་མ་ཎི་འཁུར་བའི་དུས་རན། ལོ་གསུམ་མཚམས་ལ་འདུག་པའི་དུས་རན་སོང། དེ་ཟུག་ཤེས་དེ་ཀེ་སར་ཕྲུ་ཏུའི་མདུན་ལ་སོང་སྟེ། ཏའི་གཟུགས་པོ་ལན་གཅིག་ཤར་དེ། སྐབས་ནས་ཟུམ་སྟེ་གླུ་ཞིག་བཏངས་སོ།

ངའི་ཕྲུ་ཏུས་དངོས་ལ་ཉེན་ལོ།
ཀྱང་སྒོད་དབྱེར་པས་བདག་ལ་གསན་ལོ།
ང་དང་སྐྱེ་སྟེ་ཞག་གཅིག་སོང་སྟེ་ན།
བདད་ཀྱི་བླ་མ་ཀུན་བདུལ་བ་ཡིན།

དེན་འདྲ་འགྲིང་ཚུལ་ཞིག་འགྲིངས་པ་ཡིན།
དེན་འདྲ་གྲིང་གླུ་ཞིག་བདངས་པ་ཡིན།
སྐྱེ་སྐྱེ་ཞག་གཉིས་སོང་སྐྱེ་ན།
སྲིན་པོ་མགོ་དགུ་ཀུན་བདུལ་པ་ཡིན།
སྲིན་པོ་འི་མགོ་བཅད་དེ་པོ་ལོ་བཅོས་པ་ཡིན།
སྲིན་པོ་འི་རྐང་པ་བཅད་དེ་འབེན་ཁྲོ་བཅོས་པ་ཡིན།
གླིང་མཁར་སྟོད་ལ་གྲ་ཡོག་བདངས་པ་ཡིན།
དེན་འདྲ་འགྲིང་ཚུལ་ཞིག་འགྲིངས་པ་ཡིན།
དེན་འདྲ་འགྲིང་གླུ་ཞིག་བདངས་པ་ཡིན།
སྐྱེ་སྐྱེ་ཞག་གསུམ་པ་ལ་དུག་ཤ་ཕོ་ལོང་ཀུན་བདུལ་པ་ཡིན།
དུག་ཤ་ཕོ་ལོང་ལ་སྣ་ལོ་བདགས་པ་ཡིན།
ཤར་ལྷོ་ནུབ་བྱང་དུ་གོམ་པ་བདུན་བདུན་བདང་བཙུགས།
སྐྱེ་སྐྱེ་ཞག་བཞི་སོང་སྐྱེ་འབྲོང་ཆེན་རི་རི་ཀུན་བདུལ་པ་ཡིན།
འབྲོང་གི་འབྲོང་ལྤགས་པོ་ཁྲོང་སྐྱེ།
གླིང་མཁར་རྩེ་དགུ་ལ་བདེང་སྐྱེ་ཁྲིད་པ་ཡིན།
མཁར་ལ་ཁྲིད་དེ་འདོམ་དགུ་ལྷག་མ་ལུས་པ་ཡིན།
དེན་འདྲ་འགྲིང་ཚུལ་རིག་འགྲིངས་པ་ཡིན།
དེན་འདྲ་འགྲིང་གླུ་ཞིག་བདངས་པ་ཡིན།
སྐྱེ་སྐྱེ་ཞག་ལྔ་སོང་སྐྱེ་བྱ་ཅི་ས་ཁྲུང་ཁྲུང་བདུལ་པ་ཡིན།
བྱ་ཅི་མའི་ཟེར་སོང་དེ་ཡོ་ལད་ལ་འདུག་ལོ།
ཁམ་རྐྱ་གོང་མ་གསེར་ལ་འདུག་ལོ།

ཁམ་རྩ་ཡོག་མ་དངུལ་ལ་འདུག་ལོ།
གློ་བ་དེ་ནི་ཟངས་ཀྱི་འདུག་ལོ།
མཆིན་པ་དེ་ནི་རིན་པོ་ཆེ་འདུག་ལོ།
མཁལ་མ་དེ་ནི་གཡུ་ལ་འདུག་ལོ།
རྒྱུ་མ་དེ་ནི་སྨུ་ཏིག་ལ་འདུག་ལོ།
གྲོད་པ་གོ་ཤེན་ལ་འདུག་ལོ།
ལྩོ་ཉི་གུར་ཀུམ་ལ་འདུག་ལོ།
བུ་ཉི་མ་ཁྱུང་རྩང་གླིང་མཁར་དུ་ཁྲོངས་པིན།
གླིང་གི་ཁྲོག་ཐོང་རྣམས་ལ་དངུལ་གྱི་འགྲེད་བཏངས་པིན།
གླིང་གི་ན་ཆུང་རྣམས་ལ་སྨུ་ཏིག་གི་འགྲེད་བཏངས་པིན།
གླིང་གི་རྒོད་པོ་ཚང་མ་ལ་དུང་གི་འགྲེད་བཏངས་པིན།
གླིང་གི་མཁར་བ་རྣམས་ལ་ལྕགས་ཀྱི་འགྲེད་བཏངས་པིན།
གླིང་གི་བླ་མ་རྣམས་ལ་གུར་ཀུམ་གྱི་འགྲེད་བཏངས་པིན།
དེ་ཀུན་བཏང་སྟེ་ན་དེན་འདྲ་འགྲིང་རྩོལ་བཙོས་པིན།
དེན་འདྲ་འགྲིང་སླ་ཞིག་བཏངས་པིན།
དི་རིང་ནས་ཕར་ལ་རྒྱལ་བུ་ལ་ཡོ་དབས་ལ་བཏང་ཡིན།
ང་ལ་ཤོག་པ་བཅོ་བརྒྱད་ཡིང་ངད།
རྒྱལ་བུ་ལ་ཤོག་པ་གསུམ་བཅུ་རིག་ཡིང་ལོ།

དེ་ཟུག་མོལ་ནས་ཏྲ་དང་སྤབས་རག་སྟེ་རྒྱལ་བུ་ལ་བཏངས་སོ། དེ་ནས་ཐོ་རེ་ཚུག་པོ་ལ། རྒྱལ་བུས་གསེར་ཆས་བཏང་སྟེ་ལྷ་མོ་འི་ལིའི་བ་ཟཱར་ལ་འཁྲེར་དེ། ཀང་ནས་རུས་ལ་ཞེན་པའི་ཏྲ་ལྕུག་ཅིག་བཏང་སྟེ་ན།

ཡིའི་བ་ཟླཱར་ལ་གྲེན་ལ་བང་གཅིག་བདངས། ཕྲུར་ལ་བང་གཅིག་བདངས་པ། ཡིའི་བ་ཟླཱར་བཅག་སྡེ་མེད་མཁན་བཅོས། དེར་ཡོད་པའི་ཚོང་པ་ཁ་ཅིག་གི་ལག་པ་བཅགས། ཁ་ཅིག་གི་རྐང་པ་བཅགས། ཁ་ཅིག་གི་གདོང་ཤུས། ཆ་ལག་ཚང་མ་བཅག་སྡེ་མེད་མཁན་བྱས། མི་ཡང་བར་སོང་། མི་ཚང་མ་ལ་རས ཀྱི་ཐྲི་མ་ཚོར་དེ་ཟེརས། འདི་མི་བཤད་དགོས། དེ་མན་ནས་ཡུལ་ཚང་མཁོས་ཤིག་ཡིན། ཇོ་ཇོ་ལ་ཡང་ཤེས་སོང་། དེ་ཟུག་བཅོ་སྡེ་རྒྱལ་བུ་ལོག་སྡེ་རང་གི་འབྲང་ས་ལ་བསླེབ་སོང་། དེའི་མཚན་ལ་གྲོ་ཡུལ་ཡི་བཀའ་བློན་ཀུན་གྲབས་བཅོ་སྡེ། ལག་དམར་བློན་ཆེན་ཁོ་བཤད་ཅེས་ལ་ཆེན་ཟེར་ནས་བིང་བས། ཐ་ཏུ་རྐྱང་གོད་དབྱེར་པས་བྲིས་ལ་ལག་ཐོ་བཏངས་པ། ཨ་བཱ་ཀ་སར་ལ་ཚོར་དེ་གླུ་ཞིག་བཏངས་སོ།

གླིང་གི་ཕྲུ་གུས་དངོས་ལ་ཉོན་ལོ།
རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན་ལོ།
ད་ལྷ་ལངས་དེ་ཐ་ཏུ་ལ་སྨ་སྟོད།
གྲོ་ཡུལ་གཞུང་གི་དམག་འཁྲོང་འདུག།
ཁྲོ་རང་ལངས་དེ་ཐ་ཏུ་ལ་རྡ་ཞིག་དྲང་།
རྒྱལ་བུ་ལངས་དེ་ཇ་ཞིག་འཐུང་ལོ།
དེ་ནས་ཐ་ཏུ་ལ་ཞེན་དེ་སོང་ལོ།
སྟོན་ལ་ནམ་མཁའི་ལྟོངས་ལ་སོང་ལོ།
དེ་ནས་ལོག་སྡེ་མཚོའི་མཐའ་མ་ལ་སོང་ལོ།
ང་དང་རྒྱལ་ཅེས་ཡིན་ན་རེ།
ཐ་ཏུས་གྱེན་ལ་ཁྲུར་ཅིག་དང་ཐུར་ལ་ཁྲུར་ཅིག་ཟེར་ཡིན་ལོ།

མཚོ་ལ་ལག་ཐོ་བཏང་ཅེན་ལོ།
མཚོ་ནང་ནས་ལམ་ཧ་ཉག་ཟམ་ཐིང་ཆེན་ལོ།
དེའི་ལམ་པོས་ཐིང་སྟེ་ཕར་ཀ་ལ་སོང་ལོ།

དེ་ཟུག་ཟེརས་པ་སང༌། རྒྱལ་བུ་མགྱོགས་པ་ཡངས། ཛ་ཞིག་འཕྲུང་སྟེ་སྤྲ་ཙུ་ལ་སྣ་བསྟུད་དེ་ན། སྔོན་ལ་ནམ་མཁའ་ལ་སོང༌། དེ་ནས་བབ་སྟེ་མཚོའི་མཐའ་མ་ལ་བསྐྱིབ་ཟ་ན། མཚོའི་ཕར་དངོས་ན་ལག་དམར་སློན་ཆེན་དེ་ཧ་སྔོན་ནག་ཅིག་ལ་ཞོན་དེ། ཁ་ནས་མེ་བར་ཀྲིན་ཞིག། སྣ་ནས་དུད་པ་ཐིང་གིན་ཞིག། ནམ་མཁའི་སྐར་མ་ལེན་ནེན་ཞིག་ཡོང་སྟེ། ཁོང་དེ་ཙུ་དུས་འཛོམ་སོང་ནས། བདུད་ཀྱིས་ཕྲུ་གུ་ལ་གདམ་ལན་གླུ་ཞིག།

ཆུ་དང་ཕ་རོལ་ལི་ཕྲུ་གུས་དངོས་ལ་ཉོན།
རྒྱ་མཚོའི་ཕར་ཀའི་མི་ཆུང་བདག་ལ་གསན།
ཁྱོད་ཡོང་ཡོང་གང་གི་ཡུལ་ནས་ཡོངས་ལོ།
ཁྱོད་འགྲོ་འགྲོ་གང་གི་ཡུལ་དུ་འགྲོ་ཆེན་ལོ།
ང་ཞའི་ཛེ་ཛེ་འི་བ་ཟར་པོ་ཅི་ལ་ཤིགས་ལོ།
ཁྱོད་ཀྱིས་ཕ་ལ་ཁིའཆེམས་བོར་དེ་ཡོངས་ས།
མ་ལ་མི་ངན་བསྐྱལ་དེ་ཡོངས་ས།
ཁྱོད་ལ་ཟས་མེད་ན་ཟས་བཏང་ཡིན།
ཀང་ལ་ལྷམ་མེད་ན་ལྷམ་ཡང་བཏང་ཡིན།
ཁྱོད་ཚེ་ཚད་པ་ཡིན་ན་ལམ་ནོར་པ་ཡིན།
ཁྱོད་རང་སློག་ཁྲུར་དེ་རང་ཡུལ་ལ་སོང་ལོ།

ལམ་ནོར་པ་ཡིན་ན་ཕར་ལ་སོང་ལོ།
ཚོ་ཚད་པ་ཡིན་ན་ཚུར་ལ་ཡོང་ལོ།
དེ་ཞུག་ཟེརས་པ། ཕྲུ་གུས་གཏམ་ལན་ལ་གླུ་ཞིག་འདི་ལྟར།
ཆུ་ཕ་རོལ་ལི་ཧ་ཆེན་མི་ཆེན་དངོས་ལ་ཉེན།
རྒྱ་མཚོ་འི་ཕ་རོལ་གྱི་མི་བདག་ལ་གསན།
ང་ཙག་ཡོང་ཡོང་དར་དཀར་ཙོ་གཞུང་ནས་ཡོངས།
ང་ཞ་འགྲོ་འགྲོ་ཁྲི་རྒྱ་མཚོ་ཆེན་མོ་ལ་འགྲོ་ཡིན།
ཨ་བའི་དུས་ལམ་བདུལ་བས།
མེ་མེའི་དུས་ལམ་བདུལ་བས།
འབྲོང་ཀ་ར་རིན་ཆེན་བདུལ་བ་ཆེན།
འབྲོང་གི་རྭ་ཙོ་གཡས་པ་གསེར་ལ་ཡོད།
རྭ་ཙོ་གཡོན་པ་དངུལ་ལ་ཡོད།
དེ་བོ་ངས་ནི་བདུལ་བ་ཆེན་ལོ།
དེ་ཞུག་ཟེརས་པ་སང། བདུད་ཀྱིས་གཏམ་ལན་ལ་གླུ་ཞིག་བཏངས།
ཧ་ཆུང་དང་མི་ཆུང་དངོས་ལ་ཉེན་ལོ།
ཁྱོད་རི་ཧ་དེ་ལྟས་ངན་ཞིག་འདུག་ལོ།
ཁྱོད་ཀྱི་ཧའི་རྟགས་པོ་ངན་པ་ཞིག་འདུག་ལོ།
ཡང་ན་བླམ་ཆེན་པོ་ཞིག་ལ་ཕྱུལ་ལོ།
ཡང་ན་རྒྱལ་པོ་ཆེན་པོ་ཞིག་ལ་ཕྱུལ་ལོ།
སུ་ལ་ཡང་མི་ཕྱུལ་ཟེར་ན་རེ།
ཁྱེད་དང་ངའི་ཧ་སྡེབ་ཡིན་ན།

ངའི་རྟའི་ཁ་སྣན་མ་བཏང་ཡིན་ལོ།
སྣན་མ་གསེར་སྒྲང་གང་ཟམ་བཏང་ཡིན་ལོ།
རྟའི་གཟུགས་པོ་ལ་རྩུག་ཅན་པ་མང་པོ་འདུག།
ཟེ་ཡའི་རྩུགས་སྟེང་གི་མི་ལ་གནོད་ཅེས་འདུག།
འོག་རྩུགས་པོ་ཡུལ་མི་ཚང་མ་ལ་གནོད་ཅེས་འདུག།
ཀློའི་རྩུགས་པོ་ཡབ་ཡུམ་གཉིས་ལ་གནོད་དེ་འདུག།
བྲང་རྩུགས་དེ་མཁར་དང་རྒྱལ་པོ་ལ་གནོད་དེ་འདུག།
ཁའི་ཁ་རྩུགས་དེ་དཔའ་བོ་བཅོ་བརྒྱད་ལ་གནོད་དེ་འདུག།
བདུད་ཀྱིས་དེ་ཟུག་ཟེརས་པ། ཐུ་ཏུ་ལ་སྒྲོ་ཡོང་སྨེ་གླུ་ཞིག་བཏངས།
ལྷ་བདུད་ངན་དངོས་ལ་ཉོན་དང།
ལྷ་ལག་དམར་སྒྲོན་ཆེན་བདག་ལ་གསན་ལོ།
ཐུ་ཏུ་ང་ནི་ལྟས་ངན་ཞིག་ཡིན་ལོ།
ཀྱུང་གོད་ང་ནི་ལྟས་ངན་ཞིག་ཡིན་ལོ།
སྟེང་ལྷ་ཡུལ་ཀུན་ངས་བདུལ་པ་ཡིན།
བར་གྱི་བཙན་ཡུལ་ཀུན་ངས་བདུལ་པ་ཡིན།
འོག་གི་ཀླུ་ཡུལ་ཀུན་ངས་བདུལ་པ་ཡིན།
བདུད་ཁྲུ་བ་ལག་རིངས་ཀུན་ངས་བདུལ་པ་ཡིན།
བདུད་བྱ་ར་བླན་དྲི་ཀུན་ངས་བདུལ་པ་ཡིན།
ཐུ་ཏུ་ང་ཆོན་ཞིག་མེད་ལོ།
ཀྱུང་གོད་ང་ཆོན་ཞིག་མེད་ལོ།
བདུད་ལ་དེ་ཟུག་ཟེར་དེ་ན། རང་གི་རྒྱལ་བུ་ལ་ཡང་གླུ་ཞིག་བཏངས་སོ།

ངའི་རྒྱལ་བུས་དངོས་ལ་ཉོན་ལོ།
རྒྱལ་ས་དཀར་པོས་བདག་ལ་གསན་ལོ།
རྫོ་བ་ཨ་ལེབ་རྩེ་ལེབ་ཡང་ལེབ་གསུམ་དིང་ལོ།
ཆིབས་ནས་བབ་སྟེ་རྫོ་བ་ལེབ་གསུམ་དིང་ལོ།
ཉེ་རང་རྫོ་བ་ལེབ་གསུམ་གྱི་ཁ་འདུག་ལོ།
དེ་ནས་ཕིང་པ་དཀར་ནག་དམར་གསུམ་དིང་ལོ།
སྟེང་ལྷ་ནས་ད་རུ་དཀར་པོ་ཞིག་ཁྱུང་ལོ།
ད་རུ་དཀར་པོ་འི་རྩེས་ཤིག་ཁྱུང་ལོ།
གཡས་ལ་འཁོར་དེ་གཡོན་ལ་ཕེབ་ལོ།
གཡོན་ལ་འཁོར་དེ་གཡས་ལ་ཕེབ་པ་ལོ།
ཏང་ཏང་ཏ་ར་ཏང་ཏང་ཏང་།
ཏྲོ་ལོང་མ་ལོང་ཏྲོ་ལོང་ལོང་།
བདུད་ངན་ངན་པའི་ཆོམ་ཤ་ཟོ།
བདུད་ངན་ངན་པའི་ཆོམ་ཁྲག་འཐུང་།
བར་གྱི་བཙན་ནས་ཏྲ་རུ་དམར་པོ་ཁྱུང་།
ཏྲ་རུ་དམར་པོ་འི་རྩེས་ཤིག་ཁྱུང་།
གཡས་ནས་འཁོར་དེ་གཡོན་ལ་ཕེབ།
གཡོན་ནས་འཁོར་དེ་གཡས་ལ་ཕེབ།
ཏང་ཏང་ཏ་ར་ཏང་ཏང་ཏང་།
ཏྲོ་ལོང་མ་ལོང་ཏྲོ་ལོང་ལོང་།
བདུད་ངན་ངན་པའི་ཆོམ་ཤ་ཟོ།

བདུད་ངན་ངན་པའི་ཆོས་ཁྲག་འཐུང།
འོག་གི་ཀླུ་ནས་དྲ་ཙུ་ནག་པོ་ཁྲིད།
དྲ་ཙུ་ནག་པོ་འི་རྗེས་ཤིག་ཁྲིད།
གཡས་ལ་འཁོར་དེ་གཡོན་ལ་ཐོབ།
གཡོན་ནས་འཁོར་དེ་གཡས་ལ་ཐོབ།
ཉང་དང་དར་དང་དང་དང།
རྡོ་ལོང་མ་ལོང་རྡོ་ལོང་ལོང།
བདུད་ངན་ངན་པའི་ཆོས་ཤ་ཟོ།
བདུད་ངན་ངན་པའི་ཆོས་ཁྲག་འཐུང།

དེ་ཟླུག་ཟེར་དེ་དྲ་ཙུ་ཚང་ཀ་ལ་རྗེས་རེ་ཁྲིད་སྟེ་ན། ཕྱུད་བཏངས་པ། དྲ་ཙུ་ཀུན་སོང་སྟེ་བདུད་ཀྱི་གཟུགས་པོ་འི་ནང་ཞུག་སྟེ། བྱང་ཁོག་ཚང་མའི་ནང་དུ་འགྲུལ་པ་སང། བདུད་ལག་དམར་བློན་ཆེན་དེ་ཤི་སོང། དེ་ནས་རྒྱལ་བུས་ཞིབ་ཞིབ་ལྟུངས་ལ་རྟིང་རྟིང་ཆུ་ལ་བཀལ་སོང། དེ་ནས་རྒྱལ་བུས་སྨོན་ལམ་ཞིག་བཏབ་སྟེ་ཟེརས་པ། ལག་དམར་བློན་ཆེན་དེ་གླིང་གི་ར་རྫི་ཞིག་ལྡན་ཅིག། རྟ་དེ་ཁའི་འོག་རྟ་ལྡན་ཅིག་ཟེར་དེ། ཁ་འི་རྟ་ཕང་སྟེ་བཏངས། དེ་ནས་རྒྱལ་བུ་ལོག་སྟེ་རང་གི་བྲང་ས་ལ་བསླེབ་སོང། ཡང་གྲོ་ཡུལ་གྱི་མི་ཀུན་གྱིས་གྲོས་ངན་བཙོ་སྟེ་ཟེརས་པ། ཐོ་རེ་གླིང་པའི་ཕ་བྲུ་གཉིས་ཀ་བསད་དེ། མགོ་ལག་ཁྲིད་སྟེ། ཤེལ་ལྷང་ལྷ་མོ་ལ་སྤྲུན་གཟིགས་ལ་ཕྱུལ་ན། མཁར་ཕྱེད་ཡུལ་ཕྱེད་རྫོན་པ་ལ་བཏང་ཡིན་སྲུ་ཆེན་ཟེརས་པ། དེ་ནས་བློན་པོ་མིག་དམར་སྟོན་ལ་གླིང་ཕྲུག་གི་མདུན་ལས་ཆ་ཅེས་སང་སྟན་ལ་རང་གི་མཁར་ལ་སོང། དེ་རུ་ཁའི་ཡ་ནའི་མིང་ལ

གསེར་གྱི་ཨ་རག་ཛོ་ ཛོ་ཟེར་ཅེན། མཁར་གྱི་མིང་ལ་གསེར་གྱི་མེ་དོག་མཁར་ཟེར་ཅེན། ཛོ་ཛོ་དང་ཁོ་རང་ལ་ཕྲུ་གུ་བུ་ཚ་ཞིག་དང་བུ་མོ་ཞིག་ཡོད་པིན། བུ་ཚའི་མིང་ལ་གསེར་རལ་མཁན་ཟེར་ཅེན། བུ་མོ་འི་མིང་ལ་གཡུ་རལ་མཁན་ཟེར་ཅེན། ཁོ་དེ་ཀུན་ནང་ཐུག་སྟེ་ན་གླིང་ཕྲུག་དང་འགྲན་ཅེས་ལ་ཡོང་ངེད་ཚུག་པ། ཁོ་ཡི་ཨ་ནེས་གླུ་ཞིག་བཏངས།

ལྷ་བདུད་ངན་ངན་པ་དངོས་ལ་ཉེན་ལོ།
ལྷ་སྙིན་པོ་མིག་དམར་བདག་ལ་གསན་ལོ།
བདུད་དང་ལྕ་ཕྲུག་འདྲ་ཅེས་མེན་ལོ།
སྟེང་ལྕ་ཡུལ་ལ་ཕྲུ་གུ་གསུམ་ཡོད་པིན།
དོན་ཡོད། དོན་གྲུབ། དོན་ལྡན་གསུམ་ཡོད་པ་ཨིན།
དེ་ཚང་མའི་སང་དྲག་པོ་ནི་
བུ་དོན་གྲུབ་དཀར་པོ་གླིང་ཡུལ་ལ་བཏངས།
གླིང་མགོ་མེད་ལ་མགོ་ལ་བཏངས།
གླིང་པས་ཁོ་ལ་བན་ཆུང་སྤོང་པོ་བཏགས།
ཛིའི་ཤ་བ་ཚང་མས་རྒྱལ་ལྕམ་ཆེན་མོ་བཏགས།
ཁོ་འི་ཕྲུ་གུ་རྒྱལ་བུ་རྒྱལ་ས་དཀར་པོ་ཨིན།
ལྕའི་ཕྲུ་གུ་དང་ཁྱེད་བདུད་འགྲན་ཅེས་མི་ཐུབ།
ཁྱེད་མ་ཆ་རང་གི་མཁར་ལ་འདུག།
རང་སྒྲོག་འཁྲུར་ཏེ་རང་གི་ཡུལ་ལ་འདུག།
གཡས་པའི་པང་ལ་གསེར་རལ་ཁུར།
གཡོན་པའི་པང་ལ་གཡུ་རལ་ཁུར།

རང་གི་ཨ་ནེས་དེ་ཟུག་ཟེར་ནའང༌། ཁྲོས་དབང་བཙོ་སྟེ་སོང་བས ཡང་ཁོང་གཉིས་ཀ་ཆུ་ཞིག་གི་ཕར་ཚུར་ལ་བསླིབ་སོང༌། རྒྱལ་བུའི་ཕྲ་རྩམ སྦྲ་ཞིག་ཐིངས་པ། བདུད་དེ་ཆུ་ཆབ་ཆིབ་ཅིག་གི་ནང་དུ་འགྲོལ་སོང༌། དེ་ནས་བདུད་ཀྱི་ཨ་ནེ་ཡོང་སྟེ་དྭའི་སྤབས་ནས་ཟུམ་སྟེ། ཁོ་ཧི་གོས་ཚང མ་འཆོར་དེ། གོན་ཅེས་སྔོན་པ་ཚང་མ་ཨ་ནེས་ཁྱེརས། ཨ་ནེའི་གོས ཚང་མ་ཕྱུད་དེ་རང་གི་ཨ་གུལ་སྐྱོནས། ཡང་ཨ་ནེས་ཟེརས། དཀྱོ་རང དང་ཁོམ་འགྲན་ཟེརས་པ། ད་རུང་ཡང་དབང་བཙོས། དེ་ནས་སྔོན་པོ མིག་དམར་གྱིས་ཕྲུ་གུ་ལ་གླུ་ཞིག་བཏངས་སོ།

ལྷ་ཆུའི་ཕར་ཁའི་མི་ཆུང་དངོས་ལ་ཉོན།
ཆུ་ནང་ཕར་ཁའི་ཧ་ཆུང་ཞོན་མཁན་བདག་ལ་གསན།
ཁྱེད་ཡོང་ཡོང་གང་གི་ཡུལ་ནས་ཡོངས།
ཨ་ཇོ་ལག་དམར་སྔོན་ཆེན་གང་དུ་བཏངས།
ཁྱོད་བསམ་སེ་བཏང་ན་ལག་པ་མི་གང་ལོ།
ཟོས་བཏང་ན་ཁ་མི་གང་ལོ།
ལྡད་དེ་བཏང་ན་སོ་མི་གང་ལོ།
སྨིད་བཏང་ན་ཧུ་ཧུ་མི་གང་ལོ།
རང་སྒྲོག་འཁྱེར་དེ་རང་ཡུལ་ལ་སོང༌།
ཁྱོད་མདའ་རྩེས་ལ་འཐད་ན་མདའ་རྩེས་བཏང་ཡིན།
གཞུ་རྩེས་ལ་འཐད་ན་གཞུ་རྩེས་བཏང་ཡིན།
རང་ཡུལ་ཡོད་ན་ལོག་སྟེ་སོང་ལོ།

དེ་ཟུག་ཟེརས་པ། རྒྱལ་བུས་བདུད་ལ་གཏམ་ལན་གླུ་ཞིག་འདི་ལྟར།

ཆུ་དང་ཕར་རོལ་གྱི་ཧྲ་ཆེན་མི་ཆེན་དངོས་ལ་ཉོན།
ཐང་དཀར་པོ་ནག་པོ་སྔོན་པོ་གསུམ།
དེ་ཚང་མའི་དཀྱིལ་པོ་ལ།
འུག་པ་མ་ལེ་བྱ་རྒོད་གསུམ།
བྱ་རྒོད་ཀྱིས་བསམ་པ་ཤང་ན།
འུག་པ་དང་མ་ལེ་ངས་ཟིན་བསམ།
བྱ་རྒོད་དེ་ལ་གཉིད་ཡོངས་པས།
ཀ་ལེ་ལངས་དེ་ཤིང་ཐོག་ལ་སོང་།
འུག་པ་ལངས་དེ་བྲག་གི་ཁ་སོང་།
བྱ་རྒོད་ལངས་དེ་ལྷ་ཟན།
འུག་པ་མ་ལེ་མ་མཐོང་སོང་།
ཐང་ཞིག་ན་ཅག་དཀར་ཞིག་ཐོབ།
དེ་བོ་འཁོར་དེ་ཕུར་དེ་སོང་།
ནམ་མཁའ་ནས་ཅག་དཀར་དེ་བྲག་ལ་རྒྱབས།
དེའི་ཆག་པོ་ལེན་དེ་ཟོས་སྤྱི་སོང་།
ཁྱོད་བདུད་དང་བྱ་རྒོད་མཚོགས་སེ་ཡིན།

དེ་ཟླུག་ཟེར་དེ་ན། ཤིང་གིས་གླབས་བཙོ་སྤྱི་ཟེརས་པ། ང་དང་གཉིས་ཀས་མདའ་སྐྱུར་བདང་ཡིན་ཟེར་དེ་བདུད་ཀྱིས་ཟེར་པ། ངའི་མདའ་དེ་སྐྱུག་མདའ་ཡིན་པའི་ཕྱིན་དེ་ཡོད་པས། གཡས་རི་ལྟོར་དེ། གཡོན་རི་ལྟོར་དེ། ཁྲི་རྒྱ་མཚོ་ཆེན་པོ་འི་མཐའ་མ་ལ་བསླེབ་སྤྱི་འདོམ་དགུ་ས་ལ་སྐྱུག་སྤྱི་འདུག་ཆེན་ཟེར་དེ་མདའ་བདངས་པ། ཤོས་ཟེར་མཁན་ནང་ལྷུར་ལ།

གཡས་རི་གཡོན་རི་ལྟོར་དེ་མཚོ་འི་མཐའ་མ་ལ་འདོམ་དགུ་ས་ལ་ཟུག་སྟེ་འདུགས། དེ་ནས་གླིང་ཕྲུག་གིས་ཟེརས། ངའི་མདའ་ལྷུང་མའི་ཡིན་པས། ཡང་མོ་ཡོད་དེ་རླུང་གིས་ཡབ་སྟེ་ཤོག་སྒྲ་མང་པོ་བདང་སྟེ་ཁྲིད་རང་དུ་མི་གཉིས་ཀ་འཁྱིལ་དེ་ཆེན་ཟེརས་པ། བདུད་ཀྱིས་ཁྲིད་ཀྱི་མདའི་ཤོག་སྒྲ་ཡོག་སྟེ་མི་འཁྱིལ་ཡིན་ཟེརས་པ། དེ་ནས་གླིང་ཕྲུག་གིས་མདའ་དང་གཞུ་ཁྲུར་དེ་ན་སྒྲུ་ཞིག་བདངས་སོ།

བུ་ཚ་ངའི་གཡས་ཀྱི་མདའ་དོང་པོ་འི་ནང་ན།
མའད་མོ་གསུམ་སྟོང་ལྔ་བརྒྱ་ཡོད་ལོ།
ཆེན་ཆེན་ཟེར་མཁན་བརྒྱ་ཟམ་ཡོད།
མི་ཆ་ཟེར་མཁན་སྟོང་ཟམ་ཡོད།
ཆེན་ཆེན་ཟེར་མཁན་བདང་འདོགས་མེད།
མི་ཆ་ཟེར་མཁན་བོར་འདོགས་མེད།
དེའི་ནང་ནས་ཕྱེས་པའི་མདའ་མོ་གསུམ།
མདའ་མོ་དཀར་པོ་འི་ལམ་བསྟན་གཅིག་ཨོད།
མདའ་མོ་ནག་པོ་འི་སྲོག་ཆོད་གཅིག་ཡོད།
མདའ་མོ་དམར་པོ་འི་ཁྲག་ལྷགས་གཅིག་ཨོད།
བུ་ཚ་འི་གཡོན་གྱི་གཞུ་དོང་པོ་འི་ནང་ན།
གཞུ་མོ་གསུམ་སྟོང་ལྔ་བརྒྱ་ཡོད་ལོ།
དེའི་ནང་ནས་ཕྱེས་པའི་གསེར་གཞུ་ཞིག་ཡོད་ལོ།
གཞུ་སྟོད་གསེར་པོ་གསེར་ལ་ཡོད་ལོ།
གཞུ་དཀྱིལ་དཀར་པོ་དུང་ལ་ཡོད་ལོ།

གཞུ་མཇུག་སྔོན་པོ་གཡུ་ལ་ཡོད་ལོ།
ཚང་ཟུམ་སྒྲིན་པོ འི་འབྲང་རྟས་ཡིན།
ཚོམ་སྤུགས་སྒྲིན་པོ འི་མིག་རྟས་ཡིན།
གཞུ་རྒྱུད་སྒྲིན་པོ འི་ཤུལ་རྒྱུས་ཡིན།
གཡས་རི་ལྷོར་དེ་སོང་ལོ།
གཡོན་རི་ལྷོར་དེ་སོང་ལོ།
བདུད་ཀྱི་མདའ་ལྡིང་བཅག་སྤེ་ཁྲེར།
ཨ་བའི་དུས་ལ་མ་བདུལ་མཁན།
མེ་མེའི་དུས་ལ་མ་བདུལ་མཁན།
འབྲོང་ཀ་ར་རིན་ཆེན་བདུལ་དགོས་སྲུག།
གཡས་པ་རྩ་ཙོ་གསེར་ལ་ཡོད།
གཡོན་པ་རྩ་ཙོ་དངུལ་ལ་ཡོད།
འབྲོང་ཆེན་བདུལ་དེ་རྩ་ཙོ་འཁུར་དེ་ཡོང།
མདའ་ཡིས་ཤོག་སྒྲ་ཕིང་གིན་སོང།
ཤོག་སྒྲ་བདུད་ལ་ཕོག་དགོས་སྲུག།
བདུད་ཧ་མི་གཉིས་ཀ་ཆུའི་ནང་འཁྱིལ་བཙུག་ལོ།

དེ་ཟླུག་ཟེར་དེ་རྒྱལ་བུས་མདའ་བདངས་པ། བདུད་ཧ་མི་གཉིས་ཀ་ཆུ་ཚབ་ཆིབ་ནང་དུ་འཁྱིལ་སོང་། དེ་ནས་རྒྱལ་བུ་མདུན་ལ་སོང་སྟེ་བལྟ་སྟེ་ཟེརས་པ། ལྷ་བདུད་ངན་ཁྲོད་ཀྱིས་སྔོན་ལ་ང་མི་འཁྱིལ་ཟེརས་པ། ད་མ་འཁྱིལ་ལ་ཟེར་རིན་ཞིག་གོས་ཚང་མ་འཚོར་རིན་ཞིག་ཆུའི་ནང་ནས་ཕིང་སྟེ་ན་ཟེརས། ད་ང་དང་གཉིས་ཀ་ཧ་ལ་ཞོན་ཏེ་མདའ་ལ་བལྟ་ཙམ་ལ་ཆེན་ཟེར་

དེ་ཁོང་སོང་བས། དེ་ནས་བདུད་ཀྱི་རྫའི་ཡོར་གལ་རྒྱང་གོད་དབྱེར་པའི་བང་ཡང་མ་ནོན་པར། བདུད་དེ་ཁྲི་རྒྱ་མཚོ་ཆེན་མོ་འི་མཐའ་མ་ལ་བསྒྲིབ་སྡེ་ཛ་སྙོལ་དེ་འཐུང་གིན་ཞིག་ཡོད་ཚུག། རྒྱལ་བུ་རྡིང་ནས་བསྒྲིབ་སྡེ། བདུད་ཀྱིས། ལྷ་གླིང་ཕྲུག་ཛ་འཐུང་ཅེས་ལ་ཤོག་ཟེརས་པ། གླིང་ཕྲུག་གིས། ཁྱོད་ཀྱི་ཛ་མི་འཐུང་ཟེར་དེ། ཁོ་རང་གིས་ཛ་སྙོལ་དེ་སྒྲིབ་ཅིག་ལ་ཁོལ་དེ་བདུད་པས་སྔོན་ལ་འཐུང་ཚར། དེ་ནས་གླིང་པའི་མདའ་བསྒྲིབ་སྡེ། གསེར་གྱི་རྡུ་ཅོ་དང་། དངུལ་གྱི་རྡུ་ཅོ་ཁྲར་དེ་ཁྱིངས། དེའི་རྡུ་ཅོ་བཅག་སྡེ། ཁོ་མགས་ནང་དུ་རྒྱང་སྡེ། ཚན་དྲའི་ནང་དུ་བདངས་པ་སང། དེ་འཁྲུར་ཅེས་བདུད་ལ་མཐོང་སྡེ་ཟེརས་པ། ལྷ་གླིང་ཕྲུག་དེ་བོ་ཅི་ཡིན་ང་ལ་སྟོན་ཟེརས་པ། གླིང་ཕྲུག་གིས་ཁྱེད་བདུད་ལ་ནུར་བུ་བསྟན་ཅེས་མེན་ཟེར་དེ་མ་བསྟན་ནས། བདུད་ཀྱིས་ཟེརས་པ། ང་དང་གཉིས་ཀས་ཤར་གངས་རི་དཀར་པོ་ལ་རྫའི་བང་སྤྱུར་བདང་ཡིན་ཟེརས་པ། རྒྱལ་བུ་ཐ་རྫུའི་ཁ་ཞོན་དེ་ན་ངུས་སོང། ཐ་རྫུས། ཅི་ཕི་ལ་ངུ་རྫུག་རྒྱལ་བུ་ལེ་ཟེརས་པ། རྒྱལ་བུས། ད་རེ་ཐ་རྫུ་རང་། བདུད་ཀྱི་རྫའི་ཡོར་གལ་ཐ་རྫུ་རང་གི་བང་པོ་མ་ནོན་ཟེརས་པ། ཐ་རྫུས་རྒྱལ་བུ་ལ་བསླབས་སོ། བདུད་ཚུ་ཚོད་བདུན་ཟམ་སྔོན་ལ་ཆ་ཚུག། ང་དང་ཚུ་ཚོད་བདུན་ཟམ་རྡིང་ན་ཆེན། རྒྱལ་བུ་རང་གིས་ང་ལ་རྐང་ནས་རྫུས་ལ། རྫུས་ནས་རྐང་ལ་ཞེན་པའི་རྫ་ལྷུག་ཅིག་དོང། དེ་ནས་ང་ག་ཟུག་ལ་འགྲུལ་ཡིན་ལྟོས་ཟེརས་པ། དེའི་དུས་ལ་ཤར་གངས་རི་དཀར་པོ་བའི་རྩ་ནས་སངས་རྒྱས་ཞིག་དང། ཞེན་པོ་ཞིག་ཁ་ཁྲུད་བདང་སྡེ་གངས་རིའི་མགོ་ལ་སྤུ་སྔོན་ལ་བསྒྲིབ་ན་རྒྱལ་ཅེས་བཙོ་སྡེ་ཆ་འདར་ཚུག། ཞེན་པོ་དེ་མཚན་ཕྱིད་ཟམ་ལ་ལངས་དེ། དར་གྱི་ཐལ་བ་ཁར་དེ།

ཕོ་ལོད་ཀྱི་སྟེ་པོ་དང་གངས་བཅག་གིན། དར་གྱི་ཐལ་བ་བདབ་གྱིན་འཛོགས་སད་ཚུག། སངས་རྒྱས་གངས་ཀྱི་ཙ་རུ་གཉིད་ལོག་སྟེ་འདུགས། སངས་རྒྱས་ལ་གཡོག་པོ་བཙུན་པ་ཞིག་ཡོད་པས། གནམ་ལངས་དེ་བཙུན་པས་བསླུས་པ་སད། ཞེན་པོ་གངས་རིའི་མགོ་ལ་བསྐྱིབ་ཀྱིས་སོང་སྟེ་ཡོད་ཚུག། བཙུན་པས་སངས་རྒྱས་ལ་ཟེརས། སངས་རྒྱས་ལེ། ཞེན་པོ་ ནི་གངས་རིའི་མགོ་ལ་བསྐྱིབ་ཚར་འདུག། ཉི་རང་ནམ་སྐྱོད་ཚེན་ལེ་ཟེརས་བ། སངས་རྒྱལ་ཀྱིས་ཟེརས་པ། འོ་ཁོ་ཆ་ཚུག། ཁྲི་རང་གིས་ཉི་མ་ཤར་འདུག་ག་ལྟོས་ཟེརས། དེ་ནས་ཉི་མ་ཤར་ནས། བཙུན་པས་ཡང་ཉི་མ་ཤར་ལེ་ད་ཡོངས་འང་ཟེརས་པ། དེ་ནས་སངས་རྒྱས་བཞེངས་དེ་བཟང་གོས་རྐྱང་སྟེ་ཕྲུར་དེ་སོང་བ། གངས་རིའི་མགོ་ལ་གླིང་ཕྲུག་དང་གཉིས་ཀ་དུས་གཅིག་ལ་འཛོམ་སོང་། ཞེན་པོ་གངས་རིའི་མགོ་ལ་མ་བསྐྱིབ་པར། ཙ་རུ་འབུད་དེ་ཡོངས། བདུད་མིག་དམར་གླིན་ཚེན་དེ་འབྲས་སི་བྲེ་མ་ཟེར་བའི་ས་ཁྲུད་དེ་རུ་ལུས་སོང་། གླམ་དང་ཞེན་པོ་ཁྲུད་འགྲན་དེ་གླམ་རྒྱལ་སོང་། གླིང་ཕྲུག་དང་བདུད་ཁྲུད་འགྲན་དེ་གླིང་པ་རྒྱལ་སོང་། གླིང་ཕྲུག་གིས་གངས་རིའི་མགོ་ནས་སྨོན་ལམ་བདབ་སྟེ་གླུ་ཞིག་འདི་ལྟར་རོ།

འཁྲུངས་ཤིག་ལྷན་ཤིག་རྒྱ་ནག་གཞུང་གསུམ་ལ།
གོ་ཤེན་འབྲུག་འཁྲིས་དེའི་ཡུལ་ལ་འཁྲུངས་ཤིག།
འཁྲུངས་ཤིག་ལྷན་ཤིག་རྒྱ་ནག་གཞུང་གསུམ་ལ།
གོ་ཤེན་འབྲུག་འཁྲིས་དེའི་ཡུལ་ལ་འཁྲུངས་ཤིག།
འཁྲུངས་ཤིག་ལྷན་ཤིག་དབུས་གཙང་གཞུག་གསུམ་ལ།

ཛ་དེ་ལགས་མོ་དེའི་ཡུལ་ལ་འཁྲུང་ས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་ཇོར་ཡུལ་གཞུང་གསུམ་ལ།
ཇོར་ཧ་བཟང་པོ་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་བྱུང་ཐང་གཞུང་གསུམ་ལ།
ཚ་བལ་འཛོམ་པོ་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་བྲུ་རངས་གཞུང་གསུམ་ལ།
དམན་ཚར་མོ་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་ལ་དྭགས་གཞུང་གསུམ་ལ།
སྟག་དཔའ་བོ་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་ཟངས་དཀར་གཞུང་གསུམ་ལ།
འབྲི་དམར་ལགས་མོ་དེའི་ཡུལ་ལ་ལྷན་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་བྲུ་རིག་གཞུང་གསུམ་ལ།
གྲོ་དཀར་མེ་ཏོག་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་ནང་གོང་ཞི་གར་ལ།
ཉལ་མན་ཕ་དིང་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
འཁྲུངས་ཞིག་ལྷན་ཞིག་ཁ་ཆུལ་གཞུང་གསུམ་ལ།
འབྲས་དཀར་འོ་ལོ་དེའི་ཡུལ་ལ་འཁྲུངས་ཞིག།
བྲུ་ཚ་ང་རང་གིས་སྨོན་ལམ་ཞིག་བཏབ་ཡིན།
ཕྱོགས་བརྒྱ་ནས་ཆུ་མིག་བརྒྱ་བིང་ཞིག།
ཆུ་མིག་བརྒྱ་ལ་ཡུལ་བརྒྱ་འཁྲུངས་ཞིག།

དེ་ཟླུག་ཟེར་དེ་ཡོག་སྟེ་ཡོང་ཟན། གངས་རི་སེར་གནང་དུ་ཕྱུངས

པ་སྐྱེ་དམར་ཞིག་སྐྱེ་ཕྱིང་སྟེ། རྒྱལ་བུ་ལ་ལྷ་སྡེ་ཡོད་རྩུག། ཁོས་རྒྱལ་བུ་ལ་གླུ་ཞིག་བཏངས་སོ།

གླིང་གི་དཔའ་བོས་དངོས་ལ་ཉོན།
རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན།
ང་ནི་ཉེས་པ་ཅན་ཞིག་ཡིན།
ཉེ་ཞ་གླིང་པའི་དཔའ་བོ་ཀུན།
སྤྲ་རྡོ་བསད་པའི་ཤན་པ་ཡིན།
སྤྲེ་རྡོ་འདྲེན་པའི་བླ་མ་ཡིན།
ཡང་ན་ང་ནི་འདྲེན་ཚུག་པར་མཛོད།
ཡང་ན་ང་ནི་ཕྱིང་བར་མཛོད།

དེ་སྐད་ཞུས་པ་རྒྱལ་བུས་ལྡངས་པ་དེ་ལེན་དེ་གླིང་མཁར་ལ་སླེབ་ཤིག་ཟེར་ཏེ་ཕངས་བཏང་སྟེ་ན། རྒྱལ་བུ་སྐྱོད། དེ་ནས་བདུད་མིག་དམར་སློན་ཆེན་དང་ཐུག་པ། བདུད་ཀྱིས་རྒྱལ་བུ་ལ་གླུ་ཞིག་བཏངས།

གླིང་པའི་རྒྱལ་བུས་དངོས་ལ་ཉོན།
རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན།
ཉིད་གླིང་པ་ཡིན་པ་ངེས་མ་ཤེས།
རྒྱལ་བུ་རྒྱལས་ཡིན་པ་ངེས་མ་ཤེས།
ང་ནི་ཉིད་ཀྱིས་འདྲེན་བཙུག་པར་མཛོད།
ཡང་ན་ང་མ་བསད་པར་འཕུད་པར་མཛོད།

དེ་སྐད་ཞུས་པ། རྒྱལ་བུས་བདུད་ཀྱི་དཔལ་བའི་ཁ་སེན་དྲག་ཅིག་བཏངས་པ། བདུད་ཤི་སོང་། བདུད་དེ་རྐུང་ལོ་ལྔ་བཅུ་ལོན་མཁན་ཞིག

ལ་སྐྱེ་ཤིག་ཟེར་དེ། རོ་ཐངས་བདང་སྟེན། རྒྱལ་བུ་སྒྲོད་སོང་། གྲོ་ཡུལ་ལ་བསྐྱིབ་པ། ཇོ་ཇོ་ས་གྲོགས་ཆང་ཞུ་ཅེས་ལ། གསེར་ཁྲི། དངུལ་ཁྲི། དུང་ཁྲི་བདང་སྟེ་ཡོད་པས། རྒྱ་ནག་རྒྱལ་པོའི་བུ་ཚ་གསེར་ཁྲི་ཁ་འདུགས། དེ་ནས་ཚང་མ་རང་རང་ལ་ཐོབ་འོས་པའི་ཁྲི་ཁ་རུ་འདུགས། ཀེ་སར་དང་རྒྱལ་བུ་དེ་ཚང་མའི་སང་མཇུག་ལ་ཤག་གི་ཁྲི་ཞིག་གི་ཁ་འདུགས། དེ་ནས་གྲོགས་ཆང་བླུག་ཅེས་ལ། ཤེལ་ལྷང་ལྷ་མོ འི་གཡོག་མོ་གོ་ཚོད་ཟེར་མཁན་ཞིག། གྲོང་པ་དགུ་ལ་བག་མ་སོང་ནས་མ་ཆམས་མཁན་ཞིག་ཡོད་ཚུག། གྲོགས་ཆང་ཞུ་ཅེས་ལ་ཁོ་ལངས་དེ་གླུ་ཞིག་འདི་ལྟར།

སྦྲུལ་མགོ་མ་ཆབ་རྒྱུན་ནང་དུ།
མཐོ་དགུ་མ་དཀལ་ཙོར་ཡོད་ལོ།
སྦྲུལ་མགོ་མ་ཆབ་རྒྱུན་ལ་མ་ཐུག་པ།
ཕྲུག་དེ་ཕྲུག་སོར་བཅུ་ནང་མ་ལེན་བ།
ཞལ་པར་མ་དང་མ་བདང་བ།
ལྷུ་མོ་དར་གྱི་བདུད་པ་ནང་མ་སྲུང་བ།
དྲུ་དྲུ་གསེར་གྱི་ཨ་ལོང་ནང་མ་བདང་བ།
སེམས་བྱང་ཆུབ་སེམས་ནང་འདོན་དེ་ཡིད་ལ་ཐོབ།
ཆང་གང་པོ་འཐུང་སྟེ་ཇ་གང་སྐྱིལ་དེ་བོར།

དེ་ཟླུག་ཟེརས་པ། སྐུས་ཨང་འཐུང་མ་ཐུབ་པར། སྒླིང་པའི་ཕ་བུ་གཉིས་ཀྱི་མདུན་ལ་བསྐྱིབ་པ། ཁོང་ལ་ཆང་མ་ཞུ་བ་ལོག་སྟེ་ཆའད་ཚུག་པ། སྒླིང་ཕྲུག་གིས་གླུ་ཞིག།

སི་ཚང་མའི་ཁྲིམས་ལ་ཀང་པ་ཡ་ཚོར་མང་ལྷུག་ཆེན།
ཨ་ཇེ་ཉེ་རང་གི་ཁྲིམས་ལ་སྙིང་ལ་ཚོར་མང་ལྷུག་འདུག།
ཀང་ལ་ཚོར་མང་ལྷུག་ན་ཐེང་བ་ཉན་ཡིན།
སྙིང་ལ་ཚོར་སང་ལྷུག་ན་ཐེང་ཙེས་མི་ཉན་ལོ།

དེ་ལྷུག་ཟེརས་པ་ནི། བུ་མོས་ཞུས་པ། ང་གྲོང་པ་དགུ་ཡ་བཀགས་སོང་སྤྱི་མ་ཚམས་མཁན་ཞིག་ཡིན། ང་ལ་མིང་ཞིག་བདག་ག་མཛོད་ཟེརས་པ། གླིང་ཕྲུག་གིས་གླུ་ཞིག།

མིང་མེད་པའི་ཨ་ཇེ་ལ་མིང་ཞིག་བདག་ཡིན།
སྐུ་དང་ཟར་བུ་དོལ་ཐོག་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་འགྲིག་ཨ་ཇེ་ལེ།

ཨ་ཇེས། ང་དེ་བོ་མ་གྲིག། ཡང་ཅིག་དགོ་ལེ།

ཕྲུ་གུས། མིང་མེད་པའི་ཨ་ཇེ་ལ་ཡང་མིང་ཞིག་བདག་ཡིན།
ཁྲིམ་བུ་པང་ཀ་དོག་ཙོ་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་གྲིག་ཨ་ཇེ་ལེ།

ཨ་ཇེས། དེ་བོ་ས་ཁྲུད་བད་ཅེས་ཤིག་ཡིན་ཡང་གཅིག་དགོ་ལེ།

ཕྲུ་གུས། མིང་མེད་པའི་ཨ་ཇེ་ཡ་ཡང་མིང་ཞིག་བདག་ཡིན།
ཤོལ་ནང་ཉ་ཤིང་རྒྱ་ཐག་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་གྲིག་ཨ་ཇེ་ལེ།

ཨ་ཇེས། དེ་བོ་མ་གྲིག་ཡང་གཅིག་དགོ་ལེ།

ཕྲུ་གུས། ཕ་ཙ་ཆ་ཡི་རྒྱིང་ཀེ་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་གྲིག་ཨ་ཇེ་ལེ།

ཨ་ཛེས། དེ་བོ་བ་སང་འཛམ་པོ་རིག་རྡོག་ལེ།

ཐྲུ་གུས། མིང་མེད་པའི་ཨ་ཛེ་ལ་ཡང་མིང་ཞིག་བདག་ཡིན།
གོ་ཤེན་དར་ཕྱུག་དར་དཀར་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་གྲིག་ཨ་ཛེ་ལེ།

ཨ་ཛེས། དེ་བོ་སང་དངར་མོ་ཞིག་རྡོག་ལེ།

ཐྲུ་གུས། མིང་མེད་པའི་ཨ་ཛེ་ལ་ཡང་མིང་ཞིག་བདག་ཡིན།
ཁ་ར་གུ་རམ་སྦྲང་རྩི་རོལ་མ་བདག་ཡིན།
གྲིག་ག་ན་གྲིག་ཨ་ཛེ་ལེ།

ཨ་ཛེས། དེ་བོ་ས་དངར་མོ་ཞིག་རག་ཁན་དྲེ་རིག་རྡོག་ལེ།

ཐྲུ་གུས། མིང་མེད་པའི་ཨ་ཛེ་ལ་ཡང་མིང་ཞིག་བདག་ཡིན།
ཤུག་པ་ཁན་དྲེ་རིག་དྲ་རོལ་མ་བདག་ཡིན།
གྲིག་ག་མ་གྲིག་ཨ་ཛེ་ལེ།

ཨ་ཛེས། དེ་བོ་ས་ཁན་དྲེ་རག་བདེ་མོ་རིག་རྡོག་ལེ།

ཐྲུ་གུས། མིང་མེད་པའི་ཨ་ཛེ་ལ་ཡང་མིང་ཞིག་བདག་ཡིན།
ཀུན་ལ་མཛེས་པའི་ཀུན་མཛེས་རོལ་མ་བདག་ཡིན།
ཁང་བདག་ཆེན་མོ་ཞིག་ལ་ཟག་མ་ལ་སོང།
ཁྲོད་ལ་བུ་ཚ་བདུན་སྐྱེ་ཆེན་ལོ།

དེ་ཟླུག་ཟེར་ས་པ། གཡོག་མོ་དེ་འཐད་དེ་ཁོང་ལ་གྲོགས་ཚང་ཞ་འིན་ཞིག་གླུ་འདི་ལྟར།

ཤག་དང་བཞར་ཀའི་སྟེང་དུ།
སྐྱོང་པའི་ཕ་བྲུ་གཉིས་འདུག་ལོ།

འདི་རིང་གི་ཞིག་བཟངས་ལ་ཇོ་ཇོའི་གྲོགས་ཚང་ཡིན།
ལག་པ་སག་སྨུར་ཅན་ནང་མ་ལེན་པ།
ཁ་ཚག་ར་ནང་མ་སྤུང་བ།
སེམས་དུག་སེམས་ནང་འཐུང་སྟེ་མདུན་ལ་ཕེབ།
ཚང་གང་འཐུང་སྟེ་ཇ་གང་སྐྱོལ་ལོ།

དེ་ནུག་ཟེརས་པ། ཁོང་གིས་ཁྲི་སོ་ཅན་གྱི་བེར་ཀ་ནང་ལེན་དེ། ནམ་མཁའ་ལ་ཕང་སྟེ། ལྷ་གསུམ་བརྒྱ་དྲུག་བཅུ་དང༌། ཀླུ་གསུམ་བརྒྱ་དྲུག་བཅུས་འཐུང་སྟེ། ཇ་གང་སྐྱོལ་དེ་ལུས་སོ། དེ་ནས་གསེར་ཁྲི་དངུལ་ཁྲི་ཁ་འདུག་མཁན་ཚང་མ་ཡ་མཚན་སོང༌། ཤེལ་ལྷང་ལྷ་མོ་གླིང་པ་ལ་ཐོབ་སོང༌། གླིང་ཕྲུག་མཁར་ནང་དུ་སོང་སྟེ་ཇོ་ཇོའི་ལག་པ་ནས་ཟུམ་སྟེ་འཁྲིད་དེ་ཁྱོངས་ནས། བ་ཟར་ལ་ཁྱེར་དེ། ཤེལ་ལྷང་ལྷ་མོ་ང་ལ་ཐོབ་ཟེར་དེ་ཀུ་ཅོ་བཏངས་སོ། ཕྱིར་ལོག་ཡོང་ཅན་གླུ་ཞིག།

ཇོ་ཇོ་ཐོབ་པའི་ང་ལ་དགའ་མོ་ཡོད་ལོ།
དགོངས་ཕེ་མེད་པའི་ང་ལ་ཚེར་ཀ་ཡོད་ལོ།
ཇོ་ཇོ་ཉེ་རང་གིས་ཕེ་ཞིག་འཁུར་དེ་ཁྱོང་ལོ།
སྐུ་སྐྱེ་རག་གི་ནང་དུ་ཕེ་ཞིག་ཁྱོང་ལོ།
ཨ་བ་རྒད་པོ་ལ་ལྟོགས་ཅེས་ཡོང་ཡིན།
ང་དང་གཉིས་ཀ་ནས་སོ་ཀྱུང་ངུན་ཡིན་པའི་མི་ལྟོགས་ལོ།

དེ་ནུག་ཟེར་དེ་ན། ཇོ་ཇོ་ཕྲུད་བཏངས་པ། ཇོ་ཇོ་མཁར་ལ་སོང་སྟེ་ཚེར་ཁ་ཡོང་སྟེ་ཡང་གྲོས་ངན་བཅོས། དེར་ཡོད་པའི་སྐུ་དྲག་ཚང་མས་ཟེརས། གླིང་ཕྲུག་ཁ་བཤད་དེ་མེན་ནས་མི་ཉན། ཁ་བཤད་དེ་མགོ་ལག་

སུས་འཁྲུང་ཐུབ་ཡིན་ཟེར་ས་པ། དེ་རུ་རི་ལྷ་བློན་ཆེན་ཟེར་མཁན་མི་ཞིག། གཟུག་པོ་རི་ཟམ་ཅིག་ཡོད་པས། ཁོས་ང་ཆེན། ངས་རི་བོ་པང་ལ་ལེན་ཐུབ་ཡིན། རྒྱམ་མཚོ་དུབ་ཅིག་བཙོ་ཐུབ་པ་ཡིན། ཟེར་དེ་གླུ་ཞིག་མཆོག་སེ་ཟེར་ས་སོ།

གྲོ་ཡུལ་གྱི་དཔའ་བོ་ཚང་མ་ལྷུད་སོགས་ཡིན།
ཤེལ་ལྷང་ལྷང་མོ་འི་མགོ་བསྐོར་ཡིན།
རང་གི་ཡུལ་དེ་བ་ཤིག་མཁན་ཡིན།
དགྲ་བོ་རྣམས་ཀྱི་ཤས་ལུག་ཡིན།
ཤེལ་ལྷང་ལྷ་མོ་འི་ཞབས་འདྲེན་ཡིན།
རང་གི་དཔའ་བོས་རང་འདྲ་བཙོ་མཁན་ཡིན།

དེ་ཟུག་ཟེར་ས་པ། དེར་ཡོད་པའི་དཔའ་བོ་དང་ཇོ་ཇོས། ཉེ་རང་སྐྱོད་ན་གླིང་པ་ཐུབ་ཡིན་ཉེ་རང་སྐྱོད་ཟེར་ས་པ། ཁོས་ང་ཆེན་ཟེར་དེ་བིང་ཟས། དེའི་མཚན་པོ་ལ་གླིང་པའི་ཐུ་རུས་རྒྱུ་ཡང་མ་ཟོས། ཆུ་ཡང་མ་འཐུངས་སོ། དེ་ནས་རི་བོ་བློན་ཆེན་གླིང་པའི་མདུན་ལ་བསླེབ་སྟེ། གླིང་ཕྲུག་ལ་རྟ་འདོད་བདང་སྟེ། ཁྲམ་སྨུག་པ་ལ་འདེད་པ་ལྷུར་ཁྲེར་ས་པ། གླིང་ཕྲུག་ཤོར་དེ་རི་ཞིག་གི་མགོ་ལ་བྲག་ཆེན་མོ་ཞིག་ཡོད་པས། དེ་བྲག་ནང་དུ་སྦོར་སོང་བ། རི་བོ་བློན་ཆེན་གྱིས་དེ་བྲག་ལ་མདའ་བདང་གིན་ཞིག་འདུགས་པ། དེ་ཟུག་རྒྱལ་བོ་ཀེ་སར་ལ་ཤོར་དེ། ཕོ་རོག་ཅིག་ལ་ཇུ་སྟེ། ཞག་བདུན་ལ་གླིང་ཡུལ་ལ་བསླེབ་པ་སོང་སྟེ། དཔལ་མོ་ཨ་སྟག་གི་ཕོ་བྲང་གི་ཟུར་ལ་སོང་སྟེ་གླུ་ཞིག་བཏངས་སོ།

ལྷ་དཔལ་མོ་འི་ཨ་སྟག་དངོས་ལ་ཉོན།
གླིང་ཀ་སར་རྒྱལ་པོ་གྲོ་ཡུལ་ལ་ཞི།
ཀང་ན་ལྷ་ཆོས་འབྲད་འདུག་ལོ།
མགོ་ན་ཕོ་རོག་གིས་བཙོག་འདུག།
ཕོ་རོག་ངས་འང་ཁམ་ཅིག་ཟེར་བ་ཡིན།
གླིང་ཕ་མེད་ཕྲུག་དེ་ལ།
བདུད་ཀྱིས་གྱི་འདེད་བཏང་འདུག།
རྒྱལ་བུ་རྒྱལ་སདཀར་པོ་ལ།
རི་བོ་སློན་ཆེན་གྱིས་གྱི་འདེད་བཏང་འདུག།

དེ་ཟླུག་ཟེརསཔ། དཔལ་མོ་འི་ཨ་སྟག་ལ་སྦྲོ་ཡོང་སྟེ། ཆེ་བ་གཅིག་གནམ་ལ་སླངས། ཆེ་བ་གཅིག་ས་ལ་རྡེན་དེ། མདའ་དཔོན་གོང་མའི་སྔོ་ལ་སོང་སྟེ་གླུ་ཞིག་བཏངས་སོ།

མདའ་དཔོན་གོང་མ་དངོས་ལ་ཉོན།
ཨ་མའི་བུ་ཆུང་བདག་ལ་གསན།
གླིང་གི་རྒྱལ་པོ་ཀ་སར་ནི།
གྲོ་ཡུལ་གཞུང་ལ་ཞི་དགོས་ལོ།
ཀང་ན་ལྷ་ཆོས་འབྲད་འདུག་ལོ།
མགོ་ནས་ཕོ་རོག་གིས་བཙོག་འདུག་ལོ།
ཁོརབས་ཆད་ཀ་སར་ཞི་ནའང་ཆོད།
ཨ་མའི་བུ་ཆུང་གི་རྟད་བཙད་ལ་ཆེན།
རྒྱལ་བུ་ཞལ་དཀར་གྱི་རྟར་ལ་ཆེན།

ཐུབ་ན་བདུད་དེ་བསད་པ་ཆེན།
མ་ཐུབ་ན་གླིང་པའི་ར་ཛི་བཙོ་ཡིན།
ཧ་སྤྲོ་རོག་ལ་སྨ་ཆ་སྟོད་ལོ།
ང་དང་གཉིས་ཀ་ཆེན་ལོ།

དེ་ཟུག་ཟེར་ས་པ། མདའ་དཔོན་གྱི་གཞིད་མད་དེ་ལ་སྐྱེ་ཙེས་ཚན་ཡོད་པ་ཡིན། མདའ་དཔོན་གྱིས་ཨ་ནེ་ལ་ཟེར་ས། ཕྲུ་གུ་ནམ་སྐྱེ་ན་གླིང་པའི་ར་ཛི་ཙོས་ཟེར་རེ་ན་ཁོ་སོང་བས། ལོ་སྟོང་དང་ལྷ་བཅུའི་ལམ་དེ་ཞག་བདུན་ལ་འགྲུལ་ཏེ་སོང་། དཔལ་མོ་འི་ཨ་སྟག་རི་མཐོན་པོ་ཞིག་གི་ཁ་ལ་ཞིང་སྟེ་གླུ་ཞིག་འདི་ལྟར།

ལྷ་བདུད་ངན་དེ་དངོས་ལ་ཉོན་ལོ།
རི་བོ་སློན་ཆེན་བདག་ལ་གསན་ལོ།
ཕྲུ་གུ་དང་འགྲན་མཁན་ཁྲོད་སྐྱོན་བ་རེ།
མདའ་རྩེས་ལ་དགའ་ན་ཁྲོད་འདི་རུ་ཡོང་།
མདུང་རྩེས་ལ་དགའ་ན་འདི་རུ་ཡོང་ལོ།

དེ་ཟུག་ཟེར་ས་པ། བདུད་ཡོང་སྟེ་དཔལ་མོ་འི་ཨ་སྟག་དང་མདའ་འཐབ་བཏངས་པ། དཔལ་མོ་འི་མདའ་དེ་བདུད་ཀྱི་མདའ་ལ་ཐོག་སྟེ། ཁག་པོ་གཉིས་སོང་བས། ཡང་མཐུ་ཞིག་དང་སྦྱར་ནས། སྲོན་མའི་སང་རྒྱལ་བ་སོང་ནས་རྒྱབས་པ། བདུད་ཀྱི་དབྱུང་ལག་ལ་ཐོག་ནས་དབྱུང་བ་བཅག་སྟེ། བདུད་ལ་མདའ་བཏང་ཙེམ་མ་ཐུབ་སོང་། དེ་ནས་ཡང་རྫོང་གིས་མདུང་རྩེས་བཏངས་སོ། ཡང་དཔལ་མོ་འི་མདུང་དཔལ

འཛམ་སྟོན་མོ་ལ། བདུད་ཀྱི་མདུང་ཐོག་ནས་ཆག་སོང་བས། བཙོ་ཙེས་ལ་མགར་ར་མེད་པ་སང་། དཔལ་མོ་འི་ཨ་སྟག་གིས་གླུ་ཞིག་བཏངས་སོ།

ངའི་མདུང་ཆེན་དེ་ག་ཟླུག་ལ་བཙོ་ཡིན།
མདུང་དཔལ་འཛམ་རིང་མོ་ག་ཟླུག་ལ་བཙོ་ཡིན།
ངའི་མགར་བ་ཀ་རོག་གནས་འཁྱིང་ལོ།
མགར་བ་ཀ་རོག་གཡང་འཛིན་གནས་འཁྱིང་ལོ།
ཆ་སོ་གོང་མ་ཐོ་བ་ཆེན་ཡིན་ལོ།
ཆ་སོ་ཡོག་མ་བཟོ་ རྡོ་ཡིན་ལོ།
ལྕེ་མོ་དེ་ནི་སྐམ་པ་ཡིན།
ཁ་ལྷགས་གཉིས་ཀ་སྦུད་པ་ཡིན།

དེ་ཟླུག་ཟེར་རིན་གསོ་བའི་ཁ་ལྷད་བཏངས་པ། མདུང་དེ་སྟོན་མའི་མཆོགས་སོང་ངོ་། དཔལ་མོས་ཡང་མདུང་རྒྱབ་སྟེ། རི་བ་རྙིན་ཆེན་གྱི་དཔལ་པ་ལ་ཐོག་ནས། འགྱེལ་ཙེས་ལ་གོ་ཟླུག་ནས། དཔལ་མོ་འི་ཨ་སྟག་གིས་ཟེརས། གླིང་པའི་མི་སུ་ཡོད་ནའང་། ཤོར་ཤིག་ཟེརས་པ། མདའ་དཔོན་གོང་མ་མ་མཐོང་བས། དེ་ཚུག་པ་བདུད་དེ་འགྱེལ་ནས། མདའ་དཔོན་བདུད་ཀྱི་ཐེ་ཐོང་གི་ཡོག་ལ་ནར་ཏེ་ཤི་འོ། དེ་ནས་མདའ་དཔོན་གྱི་རོ་དེ་རི་མཐོན་པོ་ཞིག་ལ་འཁྱེར་ཏེ། མདའ་གསུམ་གྱི་ཁ་བསྒྲིགས་ནས། དཔལ་མོས་གླུ་ཞིག་བཏངས་སོ།

ངའི་མདའ་དཔོན་སྐྱིང་རེ་རྗེ་སྐྱིང་རེ་རྗེ།
ཤ་འདོག་ལིགས་པོ་ལ་མི་སླབ་ཐོག། མི་སླབ་ཐོག།
སོ་ཉེ་ལིགས་མོ་ལ་དུད་པ་ཐོག། དུད་པ་ཐོག།

གཟུགས་པོ་བདེ་མོ་ལ་མེ་ཆེན་ཡོག། མེ་ཆེན་ཡོག།
ཁྱེ་རང་གླིང་ཡུལ་ལ་མ་སྐྱེ་ཤིག།
སྟེང་ལྷའི་ཡུལ་ལ་སྐྱེ་ཤིག།
དབང་བོ་རྒྱབ་བཞིན་གྱི་མདའ་དཔོན་ལ་སྐྱེ་ཤིག།

དེ་ཟུག་ཟེརས་པ། མིའི་དུད་པ་ཚང་མ་སྟེང་ལྷའི་ཡུལ་ལ་སོང། དེ་ནས་རྒྱལ་བུ་ཡང་བྲག་གི་ནང་ནས་བིང་སྟེ་ཡོང་ནས། དཔལ་མོ་འི་ཨ་སྟག་དང་འཛོམ། གླིང་པའི་དམག་ཁ་ཅིག་དེ་རུ་བསླེབ་ནས། དམག་ཚང་མ་ལ་དགོངས་པ་བདངས། དཔལ་མོ་དང་རྒྱལ་བུ་ཀེ་སར་དཔལ་ལེ་ཚང་ཀ་གྲོ་ཡུལ་ལ་སོང་བ། དེ་ཚུག་པ་ཛེ་ཛེ་རྒྱ་ནག་རྒྱལ་པོ་འི་བུ་ཚས་ཁྱེར་དེ་མེད་ཚུག། ཤིལ་མཁར་ནང་དུ་སྲུང་མཁན་ཨ་བི་ཞིག་མེན་བ་མེད་ཚུག། ཁོང་གིས་ཨ་བི་ལ་འདྲིས་པ། ཨ་བི་ཛེ་ཛེ་གར་སོང་ཟེརས་པ། ཨ་བིས། ཛེ་ཛེ་རྒྱ་ནག་རྒྱལ་པོ་འི་བུ་ཚ་དང་མཉམ་པོ་སོང། ངས་ཁོ་ལ་ཟེརས་པ་ཡིན། ཁྱོ་རང་གླིང་གི་རྒྱལ་བུ་རྒྱལ་ས་དཀར་པོ་འི་སྒྲོག་སྐལ་ཡིན། མ་ཆ་ཟེརས་པ། དབང་བཙོ་སྟེ་སོང་ཟེར་གྱིན་ཞིག་དཔལ་མོ་འི་རྐང་པ་ལ་འཐམ་སྟེ་ཐུ་ཟེརས། དེ་ནས་རྒྱལ་པོ་ཀེ་སར། དཔལ་མོ་འི་ཨ་སྟག། རྒྱལ་བུ་རྒྱལ་ས། དཔལ་ལེ་རྐོད་པོ། ཁོང་ཚང་ཀ་རྒྱ་ནག་ཕྱོགས་སུ་སོང་བས། ཞག་ཁ་ཅིག་འགྲུལ་དེ་ན། མཚོ་ཞིག་ཡོད་ཚུག། དེ་རུ་ཨ་བི་ཞིག་ཡོད་པས། ཁོང་དེ་རུ་འབྲང་ས་ལ་འདུགས་པ། ཨ་བིས་འདྲིས་པ། ཁྱོ་ཅག་ནས་ཡིན། གར་ཆ་ཅེས་ཡིན། ཁྱོ་ཞའི་མི་བརྒྱུད་ཅི་ཞིག་ཡིན་ཟེརས་པ། ཁོང་གིས། ང་ཅག་གླིང་པ་ཡིན་བ། གླིང་པའི་རྒྱལ་པོ་དང་མ་མཐུན་པར་ང་ཅ་ཐིངས་བདངས། ཡང་ཡུལ་ཅིག་ལ་རྒྱལ་

པོ་མེད་ནང་ཙ་རྒྱལ་པོ་བཙོ་ཅེས་ལ་ཆེན་ཟེརས་པས། ཨ་ཕིས་དཔལ་མོ་འི་ཨ་སྟག་ཤིན་ཏུ་བདེ་མོ་མཐོང་སྟེ་ཟེརས་པ། ང་ཞའི་རྒྱ་ནག་རྒྱལ་པོ་ལ། ལྷ་མོ་ཤེལ་ལྷང་མོ་བག་མ་ལ་ཁྲོང་སྟེ་ཡོད། ཁྲོ་ཞས་འདི་བུ་མོ་ང་ཞའི་ལྷ་ཟེར་ལ་བག་མ་ལ་མི་བཏང་ང་ཟེརས་པ། གླིང་པས་ཟེརས། རིན་མཐོ་ཁྲིག་ཁྲིག་བཏང་ན། བག་མ་ལ་དང་ཡིན་ཟེརས། དེ་ནས་ཐོ་རི་ཚུག་པོ་ལ་ཨ་ཕི་མཁར་ལ་སོང་སྟེ། རྒྱ་ནག་རྒྱལ་པོ་ལ་ཞུས་པ། རྒྱལ་པོ་ལེ། ངའི་ཁང་པ་ལ་བུ་མོ་ལོ་བཅུ་གཉིས་པ་བདེ་མོ་ཞིག་བསླེབ་སྟེ་ཡོད་པ། ཁོ་རྒྱལ་བརྒྱུད་ཅིག་ཡིན་ཟེར་འདུག། ང་དང་གི་ལྷ་ཟེར་ལ་མདུན་མ་ལ་ཁྲོང་ན་མཛེས་པོ་འདུག་ཞུས་པ། རྒྱལ་པོ་དང་ལྷ་ཟེར་དང་མི་ཚང་མ་འཕད་དེ་རྒྱལ་ཟེར་དེ་ཉོ་པ་ཁྲིར་ཅེས་བཙོ་སྟེ། ཨ་ཕི་རང་གི་ཁང་པ་ལ་ལོག་སྟེ་ཡོང་ནས་དེ་རུ་མགྲོན་རིགས་པས། མཁར་ན་རྒྱལ་པོ་ལྷ་ཟེར་ཉོ་པ་བཙོ་སྟེ་ཨ་ཕི་ཁང་པ་ལ་བསླེབ། གླིང་པ་ལ་རིན་མཐོ་སྤྲུལ་དེ། ཐོ་རི་ཚུག་པོ་ཀ་སར་དཔལ་ལེ་རྒྱལ་བུ་དཔལ་མོ་འི་ཨ་སྟག་ཚང་མ་རྒྱ་ནག་གི་མཁར་ལ་ཁྲིར་དེ་གསེར་ཁྲི་དང་། གཡུ་ཁྲི་རྒྱབ་སྟེ་བག་སྟོན་ཆེན་མོ་ཞིག་བཙོ་སྟེ། སྐུ་དྲག་དང་མི་ཚང་མ་གར་རྩེས་གླུ་ལེན་བཏང་སྟེ་ན། རྫིང་ནཛེ་ཛེ་སོ་མ། ཤེལ་ལྷང་ལྷ་མོ་དང་། དཔལ་མོ་འི་ཨ་སྟག་གཉིས་ཀ་ལ་རྩེས་ཁྲོང་སྟེ་ཁོང་རྩེས་སོ། རྩེ་འདིན་ཞིག་དཔལ་མོ་འི་ཨ་སྟག་གིས་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

ཀ་སར་ཞངས་དེ་ཏ་སྐྱ་ཚུག་ལོ།
དཔལ་མོང་རང་མགོ་ནས་རྩེ་ཡིན་ལོ།
རྒྱལ་བུ་རྒྱལ་ས་དཀྱིལ་ན་རྩེས་ལོ།

དཔལ་ལེ་གྲོད་པོ་མཇུག་ན་རྩེས་ལོ།
མགོ་ན་དཔལ་མོས་མདུང་ནང་བསད་ཡིན།
དཀྲིལ་ན་རྒྱལ་བུས་མདའ་ནང་བསོད།
མཇུག་ན་དཔལ་ལེས་གྲི་དང་བསོད།

དེ་ཟླུག་ཟེར་གྱིན་ཞིག། རྒྱ་ནག་པའི་མི་ཚང་མ་བསད་སོང་། དཔལ་མོ་འི་ཨ་སྟག་གིས། ཛེ་ཛེ་ཤེལ་ལྷང་ལྷ་མོ་འི་སྐྲ་ལ་མདུང་དཔལ་འཛམ་རིང་མོ་འི་མགོ་ལ་སྤྲིལ་ཏེ། མཁར་ནང་ནས་ཐིང་སྟེ་ཁྲིངས། ཁོང་རང་ཚང་མ་རྟ་ལ་ཞོན་ཏེ་སོང་། ཤེལ་ལྷང་ལྷ་མོ་ཀང་ཛེན་ལ་རྟའི་སྟན་ལ་འགྲུལ་བཙུག་སྟེ་ཁྲིངས་པ། ཉི་མ་ཟླ་བ་སྟེང་ལྷའི་དེབང་པོ་རྒྱབ་བཞིན། བར་བཙན་གྱི་ཨ་མ་སྐྱབ་མདུན། འོག་ཀླུའི་ཀླུ་རྒྱལ་ལྡོག་པོ། དེ་རྣམས་ལ་ཛེ་ཛེ་ཀང་ཛེན་ལ་ཡོད་ཙེས་མཐོང་སྟེ་ཚེར་ཀ་མང་པོ་ཡོངས། རྒྱལ་བུ་རྒྱལ་ས་ལ་ཡང་ཚེར་ཀ་ཡོང་སྟེ། དཔལ་མོ་འི་ཨ་སྟག་ལ་ཞུ་ཕུལ་གླུ་ཞིག་འདི་ལྟར།

ཨ་མས་གསན་དང་དཔལ་མོ་ལེ།
སྟེང་གི་ལྷ་ལ་ཡང་ཚེར་ཀ་འདུག།
བར་གྱི་བཙན་ལ་ཡང་ཚེར་ཀ་འདུག།
འོག་གི་ཀླུ་ལ་ཡང་ཚེར་ཀ་འདུག།
ཉི་མ་ཟླ་བ་ལ་ཡང་ཚེར་ཀ་འདུག་ལེ།
ལྷའི་སྲས་མོ་ཤེལ་ལྷང་སྲ།
ཕྲུད་དེ་རྟ་ལ་སྐྱོན་པར་མཛོད།

རྒྱལ་བུས་དེ་ཟླུག་ཞུས་པ། དཔལ་མོ་འི་ཨ་སྟག་གིས་གླུ་ཞིག་འདི་ལྟར།

ཕྲ་ཕ་མེད་ཕྲུ་གུ་དངོས་ལ་ཉོན།

རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན།
ཁྲོ་འི་ཕོ་ལ་མདའ་དཔོན་ཤི་སོང་།
ཤམ་འདོག་བདེ་མོ་ལ་མི་ལྷུབ་ཕོག།
སོ་ཞོ་ལགས་མོ་ལ་དུད་པ་ཕོག།
གྲོ་ལོ་བདེ་མོ་ལ་མི་ཚེན་ཕོག།
མདའ་དཔོན་ཤི་ཙེས་སི་ཡིད་དུ་མི་རགག།
ཁྲིད་ཚུར་ཚུར་མ་ཡོང་ཕར་ཕར་སོང་།

དེ་ཟུག་ཟེར་རིན་ཞིག་སྨ་ལ་ཡང་མདུང་སྒྲིལ་ཐེབ་བཏངས་སོང་། དེ་ནས་རྒྱལ་པོ་ཀི་སར་དང་། ཨ་གུ་དཔལ་ལེ་གཉིས་ཀས་ཡང་གླུ་ཞིག་བཏངས།

ནོ་ མོ་མཁྲེན་མཁྲེན་དཔལ་མོ་མཁྲེན།
ཛོ་ཛོ་ཤིལ་ལྷང་མ་ལ་ཕྱུད་རོགས་མཛོད།
སྟོང་ལྷའི་ལྷ་དམག་ལ་ཚོར་ཀ་འདུག།
བར་བཙན་གྱི་བཙན་དམག་ལ་ཚོར་ཀ་འདུག།
འོག་ཀླུའི་ཀླུ་དམག་ལ་ཚོར་ཀ་འདུག།
ཟླ་བ་དང་ཉི་མ་ལ་ཡང་ཚོར་ཀ་འདུག།
ཛོ་ཛོ་ཕྱུད་པ་མཛོད་དཔལ་མོ་མཁྲེན།

དེ་ཟུག་ཞུས་པ། ཛོ་ཛོ་ཕྱུད་བཏང་སྟེ། རྒྱལ་བུ་ཤེལ་དཀར་གྱིས་ཧ་ཕོངས་ལ་བཏང་སྟེ་ཁྲིརས། དེ་ནས་ཞག་ཁ་ཅིག་འགྲུལ་དེ་ན། ནམ་མཁའ་ནས་ཕོ་རོན་གཉིས་ཆ་ཅེས་མཐོང་སྟེ། ཁོང་གིས་གླིང་མཁར་དུ་ཕྲིན་བཀལ་པས། སྟེང་ལྷའི་ཏི་པ་ཁྲུང། དབང་པོ་རྒྱབ་ཞིན་ཏི་དཔོན་ལ

ཁྲོང། བར་བཙན་གྱི་ཉོ་པ་ཁྲོང་། ཨ་མ་སྐྱབ་མདུན་ཉོ་དཔོན་ལ་ཁྲོང། འོག་ཀླུའི་ཉོ་པ་ཁྲོང། ཀླུ་རྒྱལ་ལྷོག་པོ་ཉོ་དཔོན་ལ་ཁྲོང། གླིང་གི་དཔའ་བོ་འི་ཉོ་པ་ཁྲོང། ཨང་གར་ལྩངས་པ་ཉོ་དཔོན་ལ་ཁྲོང། གླིང་གི་བུ་མོ་འི་ཉོ་པ་ཁྲོང། ཇོ་ཇོ་འབྲུ་གུ་མ་ཉོ་དཔོན་ལ་ཁྲོང། ལྷ་མའི་ཉོ་པ་ཁྲོང། སློབ་དཔོན་རྩེ་དགུ་ཉོ་དཔོན་ལ་ཁྲོང། མོན་གྱི་ཉོ་པ་ཁྲོང། མོན་ཀང་ཁྲིལ་ཉོ་དཔོན་ལ་ཁྲོང། མགར་བའི་ཉོ་པ་ཁྲོང། ཀ་རོག་གཡང་འཛོན་ཉོ་དཔོན་ལ་ཁྲོང། བེ་དའི་ཉོ་པ་ཁྲོང། བེ་ད་ཀང་རིངས་ཉོ་དཔོན་ལ་ཁྲོང། དེ་ཐུག་གི་འཕྲིན་བཀལ་པ་སང། ཕོ་རོན་གཉིས་ཀ་གླིང་མཁར་དུ་སོང་སྟེ། ཏི་སྲུ་རྟུ་ཟེར་བའི་རི་ཁ་སོང་སྟེ། དེ་འི་འཕྲིན་ཚང་མ་གསལ་པོ་བཤད་སོང། དེ་ནས་རང་རང་ལ་ཧ་གོ་སྟེ་ཉོ་པ་དང། ཉོ་དཔོན་བཅས་བསྡུ་སྟེ་ཡོང་སྟེ་ཞག་བདུན་གྱི་ལམ་ལ་བསྐྱེབ་སྟེ། ཁོང་ཚང་མ་འཐད་ཀྱིན་ཞིག་ཡོང་སྟེ། གླིང་མཁར་དུ་བསྐྱེབ་སྟེ་མཚན་གསུམ་བག་སྟོན། ཉིན་གསུམ་དགའ་སྟོན་བཏང་གིན་ཞིག་འདུགས་སོ། ཞིལ་ལྷང་ལྷ་མོ་དང་། རྒྱལ་བུ་རྒྱལ་ས་ལ་མཁར་ཡུལ་ཚང་མའི་དབང་བཏང་སྟེ་བོརས།།

40. The Paladins of the Kesar-saga: A Collection of Sagas from Lower Ladakh. Tale No. IV.

By A. H. FRANCKE.

THE TALE OF GONGMA BUTHSA'S BOY AND rGYALSA dKARPO.

ABSTRACT OF CONTENTS.

Old Kesar went to a hermitage and left the government to his son *rGyalsa dKarpo.* The latter had a difference with his wife *Shel ldang lhamo.* To find out who was wrong, Kesar sent two storks to watch the couple. The latter heard *Shel ldang lhamo* abuse the family of Kesar by calling them 'descendants of a smith'.[1] When they brought this news to Kesar, *Shel ldang lhamo* was turned out of the castle and Agu *Khrai mgo khrai thung*, who wished to mend his bad repute by a good deed, was sent to the hermit *rTse dgu* to ask him from whence to get another wife for *rGyalsa dKarpo.* The hermit answered that a suitable princess could be obtained from *Ljang*, which country is situated on the frontier between sun and moon, and advised the Agu to circumambulate round *mDā dpon gongma's* stûpa, until a lizard would appear and nod with the head. This he might take as an assurance that his sin in killing the Agu was forgiven. When the hermit's answer was brought to *gLing*, *rGyalsa dKarpo* and the Agus started for *Ljang.*

mDā dpon gongma's son, called *Gongma buthsa*, wished to accompany the heroes and went first of all to find his horse called *rKyang Khra melong.* He found it in a valley and recognized it by a flame which proceeded from its forehead. It refused to come, until he threw stones at it with a miraculous sling. He threw three stones at a time. The first broke the horn of the wild yak *Ourulugu* to pieces, the second killed the mother mare and the third made a hole in the foal's ear.

After a feast had been given, the boy, riding on *rKyang Khra melong*, followed *rGyalsa dKarpo* and the Agus, he himself riding in the sky. The first who saw him come was Agu *Miggi rab lha*, but Agu *dPalle* would not believe until the boy arrived. The boy had at once a difference with Agu *dPalle*, but the two combatants were separated by *rGyalsa dKarpo.* Soon king *Lho krab* arrived on his way to *Ljang*, as he also wished to gain the princess of that country. He had two heroes with him; one's name was *Mi dbang ral chen* and the other's *Mi dbang ral chung.* The latter was sent first to fight against the men of *gLing.* He was opposed by

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[1] Compare "A Lower Ladakhi Version of the Kesar Saga," Tale No. I. The present tale proves beyond doubt that forefather *bKrashis* and smith *bKrashis* are identical.

Gongma buthsa; but the boy was hit twice by *Mi dbang ral chung's* spear, first in the head and then in the breast. He was healed by *Ane bKur dmanmo* who extracted the spear. Then he prayed to his father *mDā dpon gongma* and received from him good advice, in particular, which arrows to use. With these arrows he killed *Mi dbang ral chung*. In consequence of this defeat, king *Lho krab* with his followers went off to his own country.

To conquer *Ljang*, however, the assistance of the female Agu was necessary, and Agu *dPalle* was despatched to fetch her. He found her sporting in *dPal yul* (Nepal) together with a friend. After some trouble he persuaded her to come. Two yaks, mother and daughter, who offered themselves as food to the ladies, were advised to go to *dPalmoi astag's* valley in the North-West, as they would be safest in that valley.

The army of *gLing* went before the castle of *Ljang*, but could not induce the men of *Ljang* to fight. Therefore *mDā dpon gongma's* son, who is suddenly called *rNa jyu rna rtsal*, went off to find a means. He discovered a girl crying in a hut below the castle of *Ljang* and asked her why she cried. She said, the reason was that both her husbands *bLonpo mig dmar* and *Mi dbang ral chung* had been killed by men of *gLing*. She added that it would be possible to induce the men of *Ljang* to fight, if the servant-girl who carried the water to the castle was killed. In acknowledgment of this good advice *rNa jyu rna rtsal* in a miraculous way caused the girl to be re-united with *bLonpo mig dmar* in a castle on a far-off plain.

When in the morning the water-carrying girl came (apparently from the castle of *Ljang*, the passage is not quite clear), the boy killed the girl. The people of *Ljang* came in search of the murderer and the boy betrayed himself by showing the jewel which he had taken from the girl He was thrown into prison. Once three fishes which had been offered to the king, laughed; and the boy pretended to know the reason why. He said the fishes had laughed because the queen was in secret union with the king of the Nāgas. When this was found out to be untrue the boy was condemned to death. Then the men of *Ljang* could not agree with regard to the kind of death. Therefore the boy proposed to them to fetter him and burn him alive.

Whilst preparations for the execution were made, the men of *gLing* became troubled where *mDā dpon gongma's* son remained, and, to find him, sent his younger brother[1] who took the shape of a crow. When *mDā dpon gongma's* son in his fettered condition saw his younger brother, he asked him to tell *Ane bkur dmanmo* to send his horse. The horse arrived and remained unseen to the men of *Ljang*. Suddenly the boy mounted it and killed many men of *Ljang*. Then he returned to the army of *gLing* and admonished it to advance.

The daughter of the king of *Ljang*, who was married to the king of *Lho krab*, advised her father to use the power of the jewel

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[1] Apparently, the passage is not quite clear.

Tom ljag, by which everybody could be kept motionless in that very place and position, which he just occupied. Thus the whole army of *gLing* was kept bound by unseen fetters. Agu *Khrai mgo khrai thung* was accidentally away, and, therefore, escaped the magic spell. By stealing he provided food for his fettered companions and kept them alive by feeding them in their helpless positions. Then he took the shape of a cat and went into a mouse-hole, where he found the mice celebrating the wedding of their king. He seized the king and minister and was attacked by all the mice who ate his flesh. But although nothing but bone remained he did not release his captives, till the mice restored his flesh and promised to steal the jewel *Tom ljag*. Thus the whole army of *gLing* was delivered. On their way back to *gLing*, *mDā dpon's* son said he would go to *Lho krab* and fetch the princess He placed a firebrand in the tail of a fox and threw the fox into the *Lho krab* castle, which consisted of sealing wax and melted. Thus the princess of *Ljang* was gained and united with *rGyalsa dKarpo.*

At the celebration of the wedding the princess' food was restored in a miraculous way, whilst the prince's was not. Kesar took this is as proof that the girl was of better character than his son, became angry and left the couple alone in the wilderness. Then the two separated, the girl going back to *Ljang* and the boy to *gLing*. But as the latter did not cease to deplore the loss of his new bride, he was once more allowed to go and fetch her. He took service in the *Ljang* castle; but whatever work he did, as cow-herd, dog-herd, etc., it was accompanied by much blessing Once he saw in a picture of a miraculous *mchod rten*, how much he was missed by the people of *gLing*, and the couple decided to run away. Through a spell he caused the treasures of *Ljang* to adhere to his body and carried them off. The couple was followed by the army of *Ljang*, but *rGyalsa dkarpo* beat them and made a pond of blood which he surrounded with a wall of bones. Then a crow was sent to *gLing* to give news of the arrival of the couple and a great wedding was celebrated.

VOCABULARY AND NOTES.

ཡོན་ཆགས།	*yon chags*, water-offering.
མ་ཕང་།	*ma phang*, name of a lake.
ས་མ་བྲག།	*sa ma brag*, neither earth nor stone.
མི་མ་བོང་།	*mi ma bong*, neither man nor donkey.
བྱ་ཁྲུང་ཁྲུང་དཀར་མོ།	*bya khrung khrung dkarmo*, stork.

ཆེ་སེ།	*che se* (perhaps *che sai ?*), high nobility.
དགུ་ནག།	*dgu nag*, very black.
འགྲུབ་ཆུ།	*'agrub chu*, a well which is not dug.
འདི་རིང་ཤེད།	*'adi ring shed*, on that very same date (after a year or more).
སྲུབ་ལྷ།	*srub lha*, harvest festival.
དཀར་ཆང་།	*dkar chang*, a kind of beer.
ཁྲི་རྒྱ་མཚོ།	*khri rgya mthso*, the ocean
ལྗང་ཡུལ།	*ljang yul*, name of a mythological country.
ལྗངས་སི་དམ་རྒྱལ་པོ།	*ljangs sidam rgyalpo*, name of the king of that country.
ལྗངས་ས་གཡུའི་ཆོ་རོན་མོ།	*ljangs sa γyui cho ron mo*, name of the princess of *Ljang*.
སྨིགས་མ།	*smigs ma*, the same as *sminma*, eyebrow.
རྒྱང་ཕྱག་ཕུལ་ཅས།	*rgyang phyag phulcas*, circumambulate in the widest circle.
རྐྱང་ཁྲ་མེ་ལོང་།	*rkyang khra melong*, 'the piebald kiang with the mirror,' name of the horse of *mDā dpon gongma's* boy.
ཟེམས།	*sems*, the mane of a horse.
མེ་ལྕེབ།	*me lceb*, flame.
སྙན་དར།	*snyan dar*, flag of a *mchod rten*.
ཙུ་རུ་ལུ་གུ།	*curulugu*, name of a Yak.
པོ།	*po*, quite by itself, has the meaning of 'portion.'
ལྡད་པ།	*ldadpa*, the same as *gladpa*, brain.
བུ་གང་།	*bugang*, the same as *bigang*, hole.

ཁ་བ།	*khaba* or *kha*, mouth of a bottle.
ལྟ་བ་མིག་གི་རབ་ལ།	*ltaba miggi rab la* [or *lha*], name of an agu.
ཀལ་ཅོར།	*kalcor*, a little piece of butter, is often spelled *dkar chyor*.
རིམ་ཅས།	*rimcas*, be hungry (respectful); *bragcas* (classical *'abregpa*), cut off.
རྨོག།	*rmog*, in this connection the hair of a horse which is fastened to the helmet.
རྒོངས་རྩ།	*rgongs rtsa*, classical *gongba*, collar.
རྒྱལ་བུ་ཤེལ་དཀར།	*rgyalbu shel dkar*, prince 'White Crystal,' name of the prince of *gLing*.
ལྷོ་ཀྲབ།	*lho krab*, perhaps *glo krab* or *blo krab*, the name of a country and its king.
མི་དབང་རལ་ཆེན།	*mi dbang ral chen*, commander 'Large Locks,' a name of one of king *Lho krab's* heroes.
མི་དབང་རལ་ཆུང།	*mi dbang ral chung*, commander 'Small Locks,' a name of one of king *Lho krab's* heroes
ལྡར་ཅས།	*ldarcas*, break to small pieces.
རྒྱ་དར་ཙེ།	*rgya dar tse* (or *rtse*), name of a village.
དུང་རི་དར་དཀར།	*dung ri dar dkar*, 'mountain of shell, white ice,' name of Agu *dPalle's* horse.
ནག་ཁྲ་གློ་རིང།	*nag khra glo ring*, 'black-spotted, long-lasting lungs,' name of *dPalmoi astag's* horse.
ལྗ་མག།	*lja mag*, a kind of grass.
ཕོང།	*phong*, the same as *phabong*, rock.
རི་ག།	*riga*, perhaps *rikha*, mountain.
གམ་ཅས།	*gamcas*, eat (of flour, sand, etc.).
འབུབ་ཆུ།	*'abub chu*, tossing waves.
མདའ་རབས།	*mdā rabs*, list of the arrows.

གཞུ་རབས།	*γzhu rabs*, list of the bows.
མྱུང་ཙས།	*myungcas*, related to *myongba*, taste.
ཁྲ་མིག་ཡང་ཤན།	*Khra mig yangshan*, name of a female hero.
ཚོན་ཆ།	*thson cha*, armour.
རྩ་ར།	*rtsara*, the same as *rtad γcod*, research, examination.
རྔོ་བ།	*rngoba*, roast (parch) grain.
སླུ།	*slu*, joint [of meat].
སྤྲས།	*spras*, a kind of tent.
མེ་ངན།	*me ngan*, sorrow, *lit.* 'bad fire'
རྣ་གཡུ་རྣ་རྩལ།	*rna γyu rna rtsal*, occurs here suddenly as a name of *mDā dpon gongma's* boy.
སྡུག་སླུང་ཙས།	*sdug slungcas*, howl.
ངའི་སུས་ཟེན།	*ngai sus zen*, who of my [men] will eat it ?
བློན་པོ་མིག་དམར།	*blonpo mig dmar*, minister 'Red Eye,' a name.
གོ་ཟོམ།	*gozom*, decayed, withered.
ཁོང་སུས།	*khong sus*, by one of them.
སྐར་རྗག།	*skar rjag*, anger.
སྤྲུག་གཏམ།	*sprug γtam*, back-biting.
འབྱོལ་གྲོས།	*'abyal gros*, clever in noiselessly approaching the enemy.
རྔ་ལོ་ཟེར་ན།	*rnga lo zerna*, at the time of harvest.
ཏོམ་ལྗག།	*tom ljag*, said to be a stone which possesses the power to fetter all men.

ཟུན་ཅས།	*zuncas*, follow secretly.
དོང་སྲིན།	*dong srin*, flour-worm.
ཕི་དབང་རྒྱལ་ཆེན།	*pi dbang rgyal chen*, name of the mouse king.
ཞལ་ཁྲི་ཁྲའི་ཐུང།	*shal khri khrai thung*, said to mean 'the poor *Khrai thung*.'
སྐུ་རྩེས།	*sku rtses*, dance (respectful)
མེ་ཏོ།	*meto*, torch.
བྲང་རྒྱས།	*brang rgyas*, a kind of *mchod rten*
ལྡུ་རུ།	*lduru*, pot.
འགྲམ་ཅས།	*'agramcas*, the same as *'agremspa*, distribute
སྒོས་ཅས།	*sgos cas*, the same as *bgodpa*, distribute.
ས་ཐག་མ་ཆོད་པ།	*sa thag ma chodpa*, not getting any farther.
བསམ་ས།	*bsam sa*, the place which a man is thinking of.
ཟན་ཚིར་ལྔ།	*zan tsir lnga*, five meals.
ཐིམ་ཅས།	*thimcas*, here in the sense of 'attach to.'
ཁྱད་ནོར།	*khyad nor*, riches of many kinds.
ཞང་པོ།	*shangpo*, clever.
གྲོད་པའི་སྲིད།	*grodpai srid*, 'power of the stomach'; it means 'although food is not taken, hunger is not felt.'
དོ་ནས།	*donas*, the same as *debonas*, then.
རྫ།	*rdza*, here in the sense of 'wall.'
གྲོལ་མོ།	*grolmo*, the same as *rolmo*, musical instrument.

༄༅།། མདའ་དཔོན་གྱི་བུ་ཚ་དང་། རྒྱལ་བུ་རྒྱལ་ས་དཀར་པོ འི་སྐུངས་ཡིན།།

དེ་ནས་རྒྱལ་བུ་རྒྱལ་ས་དང་། ཞིལ་ལྡང་ལྷ་མོ་གཉིས་ཀ་ལ་མཁར་ཡུལ་ཚང་མ་གཏད་ནས། ཀེ་སར་རྒྱལ་པོ་ལྡིམ་ལྡིམ་མི་ལྡིམ་མཁར་ལ་མཚམས་ལ་ལོ་གསུམ་ཆོས་གསུམ་ལ་འདུག་སྡེ་ཡོད་ཚུག། ལོ་གསུམ་ཚུག་པ་གླིང་པའི་དཔའ་བོ་ཚང་མ་ལ་དགོངས་པ་སྐྱལ་དེ་ཡོད་པས། མཆོད་པ་ཆེ་ཆེ་ཟམ་གངས་རི་དཀར་པོ་ལ་ཚད་བཅོ་སྡེ། ཆུང་ཆུང་དེ་ལ་ཁ་མཐོན་པོ་ལ་ཚད་བཅོ་སྡེ། ཡོན་ཆབས་ཆེ་ཆེ་དེ་མཚོ་མོ་མ་པང་ལ་ཚད་བཅོ་སྡེ། ཆུང་ཆུང་དེ་ཆུ་མིག་ཀྱུལ་ཀྱིལ་ལ་ཚད་བཅོ་སྡེ་ཡོད་ཚུག། ལོ་གཅིག་ཟམ་སོང་སྡེ་ན། ཇོ་ཇོ་དང་རྒྱལ་བུ་མི་འཚམས་མཁན་སོང་། དེ་ནས་ཇོ་ཇོ་ཞིལ་ལྡང་ལྷ་མོ་ལྡིམ་ལྡིམ་མི་ལྡིམ་མཁར་ལ། ཨ་མ་འབྲུ་གུ་མ་ལ་ཞུ་བ་ལ་སོང་སྡེ་གླུ་ཞིག་བཏངས་སོ།

བུ་མོ འི་ཨ་མས་དངོས་ལ་ཉོན་ལོ།
ཨ་མ་འབྲུ་གུ་མས་བདག་ལ་གསན་ལོ།
སྔོན་ལ་བུ་མོ་ང་རང་གྲོ་ཡུལ་གཞུང་ལ་ཡོད་བ་ཡིན།
སྔོན་ལ་ཞིལ་ལྡང་མ་གྲོ་ཡུལ་ལ་ཡོད་པ་ཡིན།
ཨ་ནེ་དཔལ་མོས་སྐྲ་ལོ་ལ་མདུང་སྤྲིལ་བཏང་སྡེ་ཁྲོངས།
སྐྲ་ལོ་ལ་མདུང་སྤྲིལ་ལྔ་གསུམ་བཏང་སྡེ་ཁྲོངས།
དིང་ན་བུ་མོ་ང་གླིང་མཁར་སྟོད་ལ་བསྐྱེབ།
གླིང་པའི་མཁར་ལ་ལྷ་ནས་མ་བྲག་གི་མཁར་འདུག།

གླིང་པའི་མི་ལ་ལྷ་ན་མི་མ་བོང་གི་མི་འདུག།
རྒྱལ་བུ་དང་ང་རང་མི་འཚམས་པ་ཞིག་སོང་ལོ།
མ་འཚམས་པ་ལོ་ནི་གཅིག་ཟམ་སོང་ལོ།

དེ་ཟུག་ཟེར་དེ་ན། ཛོ་ཛོ་ཕྱིར་ལོག་སྟེ་གླིང་མཁར་དུ་ཡོངས། ཁ་བར་དེ་ཨ་མ་འབྲུ་གུ་མས་ཀེ་སར་ལ་ཞུས་པ། ཀེ་སར་གྱིས་ཟེརས། ད་ལྟ་ཁོང་གང་པོ་ངན་པ་འདུག། གང་པོ་བདེན་པ་འདུག་ལྷ་ཙེས་ལ་བུ་ཁྲུང་ཁྲུང་དཀར་མོ་ཀུན་ལྷ་ལ་བདང་ཡིན་ཟེར་ནས། བུ་གཉིས་ཀ་རྒྱལ་བུ་དང་ཛོ་ཛོ་གང་པོ་ངན་པ་འདུག་ལྟོས་ཟེར་དེ་བཏངས་སོ། བུ་གཉིས་ཀ་གླིང་མཁར་དུ་སོང་སྟེ་ཡིབ་སྟེ་འདུགས་པ། ཐོ་རེ་ཚུག་པོ་སྤུ་ཐོག་ལ་ཛོ་ཛོས་ལྷ་མོ་བརྒྱ་དང་མཉམ་པོ། མཁར་གྱི་ཁ་ཐོག་ལ་མེ་དོག་ལུ་ལུན་གྱི་ཕྲུག་ཆུ་འཁུར་ཏེ། ཕྲུག་བསྐོལ་བ་ཆའད་ཚུག། རྒྱལ་བུ་ལ་བུ་གཉིས་ཀ་ཕགན་ལྷ་ཙེས་མཐོང་སྟེ། ཛོ་ཛོ་འི་མདུན་ལ་སོང་སྟེ་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

ཨ་ཇེ་ཛོ་ཛོས་དངོས་ལ་ཉོན་ལོ།
ཤེལ་ལྷང་ལྷ་མོས་བདག་ལ་གསན་ལོ།
མེ་དོག་ལུ་ལུན་གྱི་ཕྲུག་ཆུ་ཞིག་འདུག་ལོ།
མེ་དོག་ལུ་ལུན་གྱི་ཕྲུག་ཆུ་ང་ལ་ཞིག་སྐུལ་ལོ།
མང་མང་མ་སྐུལ་ན་ཉུང་ཉུང་ཞིག་སྐུལ་ལོ།
མང་པོ་མ་སྐུལ་ན་བརྒྱ་ཁབ་གང་སྐུལ་ལོ།

དེ་ཟུག་ཟེརས་པ། ཛོ་ཛོ་ལ་སྤྲོ་ཡོང་སྟེ། གདམ་ལན་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

གླིང་གི་གླིང་ཕྲུག་དངོས་ལ་ཧྲན་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་བདག་ལ་གསན་ལོ།
ཆེ་སེ་ཆེན་མོ་ཞིག་ཁྲི་ཙ་ཡང་མེད་ལོ།
ཆེ་སེ་ཆེན་མོ་ཞིག་གླིང་པ་ཡང་མེད་ལོ།
གླིང་མཁར་གྱི་སྟོད་ལ་མགར་བ་ཞིག་ཡོད་པ་ཡིན།
མགར་བ་དེའི་མིང་ལ་བཀྲ་ཤིས་ཟེར་ཙན་ལོ།
དེ་མགར་བ་ལ་བུ་མོ་གསུམ་ཟམ་ཡོད་པ་ཡིན།
བུ་མོ་གཅིག་གི་མིང་ལ་དཀར་ཕྲིག་མ་ཟེར་ཙན།
གཅིག་གི་མིང་ལ་ནག་ཕྲིག་མ་ཟེར་ཙན།
གཅིག་གི་མིང་ལ་གོག་བཟང་ལྷ་མོ་ཟེར་ཙན།
ཁྱོད་ཀྱི་ཨ་ནཱ་གོག་བཟང་ལྷ་མོ་ལ་སྐྱེས་མཁན་ཡིན།
ཁྱེད་གླིང་པ་ཀུན་མགར་བའི་བརྒྱུད་ཅིག་ཡིན་ལོ།
ཁྱེད་ལ་ཕྲུག་རྩ་མི་བཏང་ལོ།
སྟེང་ལྷའི་དབང་པོ་རྒྱབ་ཉེན་ལ་མ་ཕྲུལ་པིན།
བར་བཙན་གྱི་ཨ་མ་སྐྱབ་མདུན་མ་ལ་མ་ཕྲུལ་པིན།
འོག་ཀླུའི་ཀླུ་རྒྱལ་ལྷོག་པོ་ལ་མ་ཕྲུལ་པིན།
ཁྱེད་ཀྱི་གདོང་དེ་སཱ་ནག་ནང་དགུ་ནག་ཅིག་འདུག།
ཁྱེད་ལ་ཕྲུག་རྩ་བཏང་འདོགས་རིག་མེད་ལོ།
དྲང་གི་ལྷུང་པའི་འགྲུབ་རྩ་ཞིག་ཡིན་ལོ།

དེ་ཟུག་སྒོ་བཙོའིན་ཞིག་ཟེར་ས། རྒྱལ་བུས་ཇོ་ཇོ་ལ་ཕྱག་ལན་སྒྲུ་ཞིག་བཏངས་སོ།

ཨ་ཇི་ ཇོ་ཇོས་དངོས་ལ་ཉེན་ལོ།
ཞེལ་ལྷང་ལྷ་མོས་བདག་ལ་གསན་ལོ།
ནང་མོ་འདི་རིང་ཞེད་ང་ཞའི་སྒྲུབ་ལྷ་རན་ཆེན།
དེ་ཞག་ལ་ལྷ་མོ་བརྒྱའི་མགོ་ལ་བསྒྲིབ་ཆེན་ལོ།
ང་མ་འདམ་ན་གྲལ་མགོ་ཀུན་འདོམ་ལོ།
སྔོན་ལ་ང་ནི་མ་གཡར་མོ་འི་མདུན་ལ་འདུགས་ལོ།
རྒྱུང་དུས་བུ་ཚ་ང་འབྲུ་གུ་མའི་མདུན་ལ་འདུགས།
དེ་ནས་ང་ལ་གྲིབ་ཅིག་མ་ཕོག་ལོ།
དེ་ནས་བུ་ཚ་དཔལ་མོ་འི་མདུན་ལ་འདུགས།
དེ་ནའང་ང་ལ་གྲིབ་ཅིག་མ་ཕོག་སོང།
དེ་ནས་ང་བདུད་ཡུལ་ལ་སོང་ཕིན།
བདུད་ཁྲ་བ་ལག་རིང་གི་གྲིབ་མ་ཕོག་ལོ།
དེ་ནས་ང་ཧོར་ཡུལ་ལ་སོང་བ་ཡིན།
ཧོར་གུར་དཀར་རྒྱལ་པོ་འི་གྲིབ་མ་ཕོག་ལོ།
ད་ལྷ་ཇོ་ ཇོ་ཉེ་རི་མདུན་ལ་འདུགས་ལོ།
ཇོ་ཇོ་ཉེ་རི་གྲིབ་ཅིག་ཕོག་ལོ།
གྲིབ་དེ་འཕྱི་བའི་ཕྱག་རྒྱ་ཞིག་སྐྱུལ་ལོ།
མང་མང་མ་སྐྱུལ་ན་ཉུང་ཉུང་ཞིག་སྐྱུལ་ལོ།

དེ་ལྟག་ཟེརས་པ། ཇོ་ཇོ་ནང་དུ་སོང་བ། བྲུ་ཁྲུང་ཁྲུང་དཀར་མོ་གཅིག་ཀ་ཕུར་དེ་ལྡེམ་ལྡེམ་མི་ལྡེམ་མཁར་ལ་སོང་སྟེ། གནས་རྩོལ་ཚང་མཀོ་སར་ལ་ཞུ་སོང། ཇོ་ཇོས་ཉེ་ཙ་གླིང་བ་ཀུན་ཚང་མ་མགར་བའི་

བརྒྱུད་ཡིན། ཁྱེད་ལ་ཕྱུག་རྩ་མི་བཏང༌། དེ་ཟླུག་སྒྲོ་ཆེན་མོ་བསྟན་འདུག། རྒྱལ་བུ་བདེན་པ་འདུག། ཇོ་ཇོ་ཛུན་པ་འདུག་ཞུས་པ། ཀ་སར་ལ་སྒྲོ་ཡོང་སྟེ། མཚམས་སྒོ་བཅག་སྟེ་གླིང་མཁར་དུ་རྒྱལ་བུ་ལ་བོས་པ་མི་བཏང་སྟེ། རྒྱལ་བུ་དེར་བསླེབ་ནས། ཀ་སར་གྱིས་གླུ་འདི་ལྟར།

གླིང་གི་ཕ་མེད་ཕྲུ་གུས་དངོས་ལ་ཉོན་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་བདག་ལ་གསན་ལོ།
ཨ་བཱ་ང་རང་ལ་ཡང་བག་མ་བརྒྱ་ཟམ་ཁྲོངས་པ་ཡིན།
བུ་ཚོ་ཁྱེད་ལ་ཡང་མདུན་མ་ཞིག་ཞུ་ཡིན།
གླིང་གི་དཔའ་བོ་ཚང་མ་ལ་དཀར་ཚང་ཞིག་ཞུས་ལོ།
ཤེལ་ལྷང་ལྷ་མོ་དེ་དབྱར་གསུམ་ཉི་ཚན་ལ་ཕོང་ལོ།
དགུན་གསུམ་ཁྲུགས་ཆེན་ལ་ཕོང་ལོ།
ཁྲི་རྒྱ་མཚོ་ཆེན་པོ་ལ་ཀླ་དགུ་ཤི་བཙུག་སྟེ་བོར་ལོ།
ཀླ་དགུ་གསོན་བཙུག་སྟེ་བོར་ལོ།

དེ་ཟླུག་ཟེརས་པ་སང༌། རྒྱལ་བུ་ཕྱིར་ལོག་སྟེ་ཡོངས་ནས། ཇོ་ཇོ་ཤེལ་ལྷང་ལྷ་མོ་མཁར་ནང་ནས་ཐིངས་སོ། གླིང་མཁར་གྱི་མགོ་ལ་ཐིང་སྟེ། དཔའ་བོ་ཚང་མ་ལ་སྐད་བཏང་ནས་བསྡུ་སྟེ་ཚང་མ་ལ་དཀལ་ཅོར་ཞུ་སྟེ། ཚང་མས་གསུང་གྲོས་མཛད་ནས། སེ་མེ་སློབ་དཔོན་རྩེ་དགུ་ལ་ཞུ་ཅེས་ལ་ཕྱུ་ཆེན་ཟེརས་པ། སྔོན་ལ་འབུ་དམར་ལམ་བསྟན་ལ་ཏེར་གྱི་མདའ་ཕོག་སྟེ་ཡོད་ཟན། ཁྲའི་མགོ་ཁྲའི་ཐུང་གིས་ཕྱུད་ཁྱོངས་ནས། བུ་དམར་ལམ་བསྟན་ཤེ་བས། དེའི་ལན་གྱུར་ལ་ཁྲའི་ཐུང་དཔའ་བོ་ཚང་མས་ཐིངས་བཏང་སྟེ་ཡོད་པས། ཞོས་དཔའ་བོ་ཚང་མ་ལ་ཞུས་པ། སེ་མེ་ལ་ཞུ་ཅེས

ལང་ཆེན། གཅིག་ནི་ང་རང་གི་སྡིག་པ་ཞུ་ཡིན། གཉིས་ནི་རྒྱལ་བུའི་མདུན་མའི་ཕྱིར་ལ་ཞུ་ཡིན། དེ་ཟུག་ཟེར་པ། དཔའ་བོ་ཚང་མས་རྒྱལ་ལ་སོང་ཟེརས་པ། ཧ་སྤྱོ་རིག་ངོན་པོན་ཁ་ལ་བདངས། ཁོ་དེ་ལོ་ཞོན་དེ་སེ་མེའི་རྟར་སོང་བས། སེ་མེའི་སྒོ་ལ་སོང་སྟེ་གླུ་ཞིག་འདི་ལྟར།

གད་པ་གསེར་གྱི་ཆར་སྐྱིབས་པའི་ནང་ནས།
སེ་མེ་ཉིད་ཀྱིས་དངོས་ལ་ཉོན་ལོ།
རྒྱལ་བུ་དང་ཇོ་ཇོ་མི་མཐུན་ཙམ་སོང་ལོ།
ཞལ་དཀར་དང་ཞལ་ལྷང་མ་མི་མཐུན་བ་སོང་ལོ།
གླིང་ཀ་སར་རྒྱལ་པོ་ལ་མགར་བརྒྱུད་ཅིག་ཟེརས་ལོ།
གླིང་གི་དཔའ་བོ་ཚང་མ་ལ་ཁ་དམན་ཞིག་ཡོངས་ལོ།
རྒྱལ་བུ་ལ་མཛོས་པའི་ཇོ་ཇོ་ཞིག་འཁྲུང་ཡིན་ལོ།
ཞལ་དཀར་ལ་འཛོམ་པའི་ཇོ་ཇོ་ཞིག་གར་འདུག་གཟིགས།
མོ་དཔེ་བཏིང་སྟེ་མོ་ཞིག་ཏེབ་ལོ།
རྩིས་དཔེ་བཏིང་སྟེ་རྩིས་ཤིག་སྐོར་ལོ།

དེ་ཟུག་ཟེརས་པ་སང། སེ་མེས་གླུ་འདི་ལྟར་བཏངས་སོ།

གླིང་གི་དཔའ་བོས་དངོས་ལ་ཉོན་དང།
ཁྲའི་མགོ་ཁྲའི་ཐུང་བདག་ལ་གསན་ལོ།
འདི་ཇོ་ཇོ་དེ་ལྷ་མོ་ཞིག་ཡིན་ལོ།
ཞལ་ལྷང་ལྷ་མོ་རྒྱལ་རིག་ཡིན་ལོ།
ཁོ་ཁྲོང་བའི་དུས་ལ་དཔའ་བོ་ཞིག་ཡི་ལོ།

མདའ་དཔོན་གོང་མ་ཀུན་གྲོ་ཡུལ་ལ་ཤི་ལོ།
དེ་ནུག་གི་ཛེ་ཛེ་ཡང་མི་ཐོབ་ལོ།

དེ་ནུག་ཟེརས་པ་སང། ཁྲའི་མགོ་ཁྲའི་ཐུང་གིས། མེ་མེ་ལ་ཡི་གི་ཕིང་སྟེ་བདངས་པ། མེ་མེས་ཡི་གི་སིལ་ཏེ་ནང་ལ་སོང་སྟེ། མོ་བདབས་པ། ལྷུང་ཡུལ་ནང་གླིང་ཡུལ་གྱི་བར་ལ་ལྷུངས་སི་དམ་རྒྱལ་པོ་ལ། བུ་མོ་ལྷུང་ས་གཡུའི་ཚོ་རོན་མོ་ཡོད་ཅེས་ཤེས་ནས། ཁ་ཐོག་ལ་ཐིང་སྟེ་མེ་མེས་གླུ་ཞིག་བདངས།

གླིང་གི་དཔའ་བོས་དངོས་ལ་ཉོན།
ཁྲའི་མགོ་ཁྲའི་ཐུང་གིས་བདག་ལ་གསན་ལོ།
མཐུན་ལོ་ཟེར་ན་དེན་ན་ཛེ་ཛེ་རྒྱལ་ལོ།
མ་མཐུན་ཟེར་ན་ཡང་ཛེ་ཛེ་ཞིག་འདུག་ལོ།
ལྷུང་ཡུལ་ནང་གླིང་ཡུལ་ལི་མཚམས་ལ་འདུག་ལོ།
ལྷུངས་སི་དམ་རྒྱལ་པོ་འི་བུ་མོ་ཞིག་འདུག་ལོ།
ལྷུང་ས་གཡུ་འི་ཚོ་རོན་མ་ཞིག་འདུག་ལོ།
ཁོག་སྟོད་གསེར་ལ་བཞེངས་མཁན་ཞིག་འདུག་ལོ།
སྐྱིད་པ་དུང་ལ་ཡོད་མཁན་ཞིག་འདུག་ལོ།
དཔལ་བ་བཅོ་ལྔའི་ཟླ་བ་ཞིག་འདུག་ལོ།
སྨིགས་མ་ཀ་ཁའི་ན་རོ་ཞིག་འདུག་ལོ།
ཞལ་ནི་པད་མའི་མེ་ཏོག་ཅིག་འདུག་ལོ།
སོ་ཚེ་དར་ནང་སྤུ་ཏིག་ཅིག་འདུག་ལོ།
དཔུང་པ་གཡས་པ་ན་ཉི་མ་ཤར་འདུག།

དཔུང་པ་གཡོན་པ་ན་ཁྲབ་ཤར་འདུག །
ཡར་ངོའི་བཅོ་ལྔ་གང་བའི་ཞག་ལ་ཉི་པ་ཁྱེར་ཟེར།
མར་ངོའི་ཁྲབ་གང་པའི་ཞག་ལ་སོང་ཟེར།

དེ་ཙུག་ཟེརས་པ་སང་། ཁྲའི་མགོ་ཁྲའི་ཐུང་ཕྱིར་ལོག་སྟེ་ཡོང་སྟེ་ན། ཁོ་རང་གི་སྡུག་བསྔལ་དེ་ཞུ་ཅེས་ལ་བརྗོད་ནས། ཡང་ལོག་སྟེ་ཡོང་ནས་མེ་མེ་ལ་ཞུས་པའི་གླུ་འདི་ལྟར།

མེ་མེ་སྐྱོབ་དཔོན་དངོས་ལ་ཉོན་ལོ།
སྐྱོབ་དཔོན་རྩེ་དགུ་བདག་ལ་གསན་ལོ།
བུ་ཚ་ང་རང་ལན་ཆགས་ཅན་ཞིག་ཡིན་ལོ།
མོ་དཔེ་བཏིང་སྟེ་མོ་ཞིག་དོབ་ལོ།
རྩིས་དཔེ་བཏིང་སྟེ་རྩིས་ཤིག་སྐོར་ལོ།

དེ་ཙུག་ཞུས་པའི་ལན་དུ་མེ་མེས་གླུ་ཞིག་བཏངས་སོ།

གླིང་གི་དཔའ་བོས་དངོས་ལ་ཉོན།
ཁྲའི་མགོ་ཁྲའི་ཐུང་བདག་ལ་གསན།
གླིང་མཁར་སྟོད་ལ་གདུང་རྟེན་ཞིག་ཡོད་ལོ།
འབྲུ་དམར་ལམ་བསྟན་གྱི་གདུང་རྟེན་ཡིན་ལོ།
དེ་ལ་ཁྲོ་རང་སོང་ལོ།
སྐོར་བ་བརྒྱ་ཟམ་སྐོར་ལོ།
རྐྱང་ཕྱག་བརྒྱ་ཟམ་ཕྱལ་ལོ།
གདུང་རྟེན་གྱི་མགོ་ལ་ལྕངས་པ་ཞིག་ཤིང་ཆེན་ལོ།

ལངས་པས་མགོ་དེ་ཙོག་ཙོག་བཙོ་ཅན་ལོ།
ཙ
དེ་ནས་ཁྲིད་ཀྱི་སྡིག་པ་སེལ་ཆན་ལོ།

དེ་ཟླུག་ཟེརས་པ་སང་། ཁྲའི་མགོ་ཁྲའི་ཐུང་གླིང་མཁར་གྱི་སྟོད་ལ་སོང་བས། དེ་རུ་གདུང་རྟེན་ཞིག་ཡོད་ཚུག། ཁོས་དེ་ལ་སྐོར་བ་བརྒྱ་དང་གྲངས་མེད་རྒྱབས། རྒྱང་ཕྱག་བརྒྱ་དང་གྲངས་མེད་ཕུལ་སོང་བས། དེ་གདུང་རྟེན་གྱི་མགོ་ལ་ལངས ཙ་པ་སྐྱེ་དམར་ཞིག་བིང་སྡེ་མགོ་ཙོག་ཙོག་བཙོས་པ་སང་། ཁོ་གླིང་ཡུལ་ལ་ཡོངས། ཁ་འི་སྡིག་པ་ཡང་དག་སོང་། གླིང་པའི་དཔའ་བོ་ཚང་མའི་མདུན་ལ་བསྐྱིབ་སྡེ། མི་མིས་ཅི་ཟེར་མཁན་ཚང་མ་ཁོང་ལ་བཤད་སོང་། དེ་ནས་གླིང་པའི་དམག་བསྡུ་སྡེ། གནམ་གྱི་སྐར་མ་ལ་རྩིས་ཡོད། གླིང་པའི་དམག་ལ་རྩིས་མེད། ཆུའི་ཆུ་རྡོ་བ་ལ་རྩིས་ཡོད། གླིང་པའི་དམག་ལ་རྩིས་མེད་མཁན་གྱི་དམག་བསྡུ་སོང་། དེ་ཚང་མ་ཁྲིད་དེ་ལྡོང་ཡུལ་ཕྱོགས་ལ་སོང་བས། ཞག་བདུན་གྱི་ལམ་འགྲུལ་དེ་ན། དེ་དམག་ཚང་མ་ཕྱིར་ལོག་བཏང་སྡེ། རྒྱལ་བུ་ཁོ་རང་དང་། ཟླ་བ་སིག་གི་རབ་ལྷ། ཁ་ཆན་གཉིས། གོང་མ་བུ་ཆ། མདའ་དཔོན་བཅོ་སྡེ་སོང་། དཔལ་ལི་རྒོད་པོ་དང་མི་ལྔ་ཟམ་སོང་བས། ཁོང་བྲེ་ཐང་ཞིག་གི་ཁ་དགོངས་ལ་འདུགས། གླིང་ཡུལ་ལ་མདའ་དཔོན་གྱི་བུ་ཆ་ཆུང་ཧྲུན་ཞིག་ཡོད་པས། ཁོ་ཕྲུ་གུ་ཚང་མ་དང་མཉམ་པོ་མདའ་རྩེས་དང་། པོ་ལོ་བདང་གིན་ཞིག་འདུག་གད་ཚུག། ཕྲུ་གུ་ཚང་མའི་སང་ཁོ་རྒྱལ་ལད་ཚུག་པ། ཁོ་བསྐྱིབ་སྡེ་མིན་པ་གསུམ་ཡང་རྩེ་མི་ཚོག་པ་ཡོད་པ་ཡིན། ཞག་ཅིག་ཕྲུ་གུ་ཚང་མ་འཛོམ་ཚར་ནའང་། མདའ་དཔོན་གྱི་ཕྲུ་གུམ་བསྐྱིབ་སོང་། ཕྲུ་གུ་ཅིག་གིས་ཟེརས་པ། ཁོ་སྐྱིབ་སྐྱིབ་ལ།

ང་དང་གིས་པོ་ལོ་བདང་ཡིན་ཟེར་ཏེ་བཏངས་པ། དེ་ནས་མདའ་དཔོན་གྱི་ཕྲུ་གུ་བསྐྱེབ་སྟེ་ཟེར། ཁྱོད་ཀུན་ལ་སྤྲོན་ལ་ང་མ་བསྐྱེབ་པ་སུམ་རྟེས་ཟེར་འདུག། ཟེར་གྱིན་ཞིག་ཕྲུ་གུ་སུ་སུ་ལ་བཟུངས་པ། ཕྲུ་གུ་ཅིག་གིས་ཟེར། ཁྱོ་རང་གིས་ཅི་ཕོ་སོ་བཅོ་རུག། ཁྱོ་རང་གི་མདའ་དཔོན་མ་ཁྲབ་པ། མགོང་མ་བུ་ཚ་ཚབས་ལ་སོང་། ལྷུང་ཡུལ་ན་རྒྱལ་བུ་ལ་མདུན་མ་ཞུ་བ་ལ་སོང་ཟེརས་པ། མདའ་དཔོན་གྱི་ཕྲུ་གུ་ལ་སྐྱོ་ཡོང་སྟེ། ཨ་མའི་མདུན་ལ་སོང་སྟེ་ཟེརས་པ། ཨ་མ་ལེ། ང་དང་གི་མདའ་དཔོན་དེ་གོང་མ་བུ་ཚ་ལ་བཏང་སྟེ། ལྷུང་ཡུལ་ལ་རྒྱལ་བུ་ལ་མདུན་མ་ཞུ་ཕྱིར་ལ་སོང་ཟེར་འདུག། ཁོ་ལ་མདའ་དཔོན་མི་བཏང་། ང་མདའ་དཔོན་བཅོ་སྟེ་ཆེན་ཕྲུ་གུ་ཚང་མའི་ཁ་དམན་ཡོང་འདུག། ངའི་མདའ་དང་གཞུ་ཏོང་ཟེརས་པ། ཨ་མས་ཁྱོ་རང་ད་རུང་ཆུང་ངུན་ཡིན། མ་ཀ། སྤྲོན་མ་ཨ་པ་ཡང་དབང་བཅོ་སྟེ་སོང་ནས་ཤི་བ་ཡིན་ཟེརས་པ། ཕྲུ་གུས་དབང་བཅོ་སྟེ་ཆེན་ཟེརས་པ། ཡང་ཨ་མས་ཟེརས་པ། ཁྱོ་རང་གི་མདའ་དཔོན་མི་ཐུབ། སྟེང་ལྷ་ཡུལ་ལ་སོང་སྟེ་མདའ་དཔོན་འཁྱོང་ཡིན། བར་བཙན་ཡུལ་ལ་སོང་སྟེ་འཁྱོང་ཡིན། འོག་ཀླུ་ཡུལ་ལ་སོང་སྟེ་འཁྱོང་ཡིན། རྒྱལ་པོ་ཀེ་སར་ལ་ཡང་ཞུ་སྟེ་འཁྱོང་ཡིན་ཟེརས། ཕྲུ་གུས་མན་ང་ཆེན་ཟེརས་པ། ཨ་མ་ལ་སྐྱོ་ཡོང་སྟེ་མདའ་དང་གཞུ་མི་ཁྱེར་གཅིག་ཡོད་ཚུག། དེ་འཁྱོང་སྟེ་ཁོ་འི་མདུན་ལ་ཕངས་བདང་སྟེ་ཟེར་པ། ཁྱོ་རང་གི་རྟ་སྐལ་ལ་རྐུང་ཁྲ་མེ་ལོང་ཟེར་མཁན་ཞིག་རྒྱལ་བུ་ཤེལ་དཀར་གྱིས་བདང་སྟེ་ཡོད། དེ་བོ་ཐོབ་སྟེ་མིན་པ་ཁྱོ་རང་ཆ་མི་ཉམ། རྟ་དེ་སྦོ་རྡོ་ནང་མའི་ལིང་སའི་ནང་དུ་ཡོད། དེ་རུ་ལྟ་ལ་སོང་ཟེརས་པ། ཕྲུ་གུས་མི་ཁྱེར་གཅིག་གི་སག་སླག་པོ་ཁྱེར་

དེ་རི་ལ་སོང་། ལམ་བར་ཞིག་ལ་གླ་མ་འཁྱུབ་པ་ཞིག་དང་ཕྲུག་པས། གླ་མས་བསམ། ང་རང་གླ་མ་བཟང་པོ་ཞིག་ཡིན། ཁོས་ང་ལ་རྩྭ་སྔོན་ལ་ཟེར་ཡིན་འགྲོ་བསམ། ཕྲུ་གུས་ང་དཔའ་བོ་ཞིག་ཡིན། གླ་མས་སྔོན་ལ་རྩྭ་ཟེར་ཡིན་འགྲོ་བསམ་སྟེ། ཁོང་གཉིས་ཀ་དེ་རུ་ཙང་མ་ཟེར་བ་འདུགས་པས། རྫོང་ན་ཕྲུ་གུས་སྔོན་ལ་མེ་མེ་ལ་གླུ་ཞིག་བཏངས།

མེ་མེའི་རྡི་པི་ལ་ལྷ་ན་ཆད་དེ་འདུག་ལོ།
མེ་མེའི་གོས་ལ་ལྷ་ན་ཆད་དེ་འདུག་ལོ།
མེ་མེའི་ལྷམ་ལ་ལྷ་ན་ཆད་དེ་འདུག་ལོ།
མེ་མེའི་བེར་ཀ་ལ་ལྷ་ན་ཟིན་དེ་འདུག་ལོ།
དེན་འདྲ་མེ་མེ་ག་རུ་ཆེན་ལོ།

དེ་ལྟུག་ཟེར་པ་སང་། མེ་མེས་ལན་དུ་གླུ་ཞིག་འདི་ལྟར།

གླིང་ཕྲུག་ཁྲོད་རིས་དངོས་ལ་ཉོན་ལོ།
ང་ནི་འབྲུ་དམར་གྱི་ཕྱུར་ཁང་མཛལ་བ་ཆེན།
འབྲུ་དམར་ལམ་བསྟན་གྱི་གདུང་རྟེན་མཛལ་བ་ཆེན།
ཕྱུར་ཁང་མ་མཛལ་བ་ལོ་ནི་མང་པོ་སོང་།
ད་རུང་ཕྱུར་ཁང་མ་མཛལ་ལོ།
ཉི་རང་དཔའ་བོ་ཞིག་ཡིན་ཅེས་འདུག་ལོ།
ང་ལ་ཕྱུར་ཁང་བསྟན་རོགས་མཛོད་ལོ།

དེ་ལྟུག་ཟེརས་པ། ཕྲུ་གུས་གླུ་ཞིག་བཏངས་སོ།

འདི་རིའི་ལ་ལོགས་ནངའི་རྡ་ཞིག་ཡོད་པ།
འདི་ཡའི་ལ་ལོགས་ན་ཀྲུང་ཁྲ་མེ་ལོང་ཞིག་ཡོད་པ།

ཧའི་ཟེམས་མགོ་ན་མེ་སྐྱོང་ཙོ་ཟམ་འབར་རད།
དེ་ཟླུག་ཧ་ཞིག་མ་མཐོང་ང་མེ་མེ་ལེ།

དེ་ཟླུག་ཟེརས་པ། མེ་མེས་བླུ་ཞིག།

འདི་ལའི་ལ་ལོགས་ན་ཀྲུང་ནི་སྟོང་ཟམ་འདུག་ལོ།
དེའི་ཁྲོ་ལ་ཀྲུང་ཀད་མོ་ཞིག་འདུག་ལོ།
གཟུགས་པོ་འི་ཁ་སྤུ་གཅིག་ཀྱང་མིན་འདུག་ལོ།
དེའི་ཀྲུང་ལ་ཐུ་ཙུ་ཞིག་འདུག་ལོ།
ཐུ་ཙུའི་ཟེམས་མགོ་ན་མེ་སྐྱོང་ཙོ་ཟམ་འབར་འདུག།
མེའི་སེ་ལྷེབ་དེ་སྟེང་ལྷ་ཡུལ་ལ་བསླེབ་འདུག།
དེ་ཟླུག་ཐུ་ཙུ་ཞིག་ང་ལ་མཐོང་ལོ།
ཁྲོ་རང་གི་ཧ་དེ་ངས་མི་ཤེས་ལོ།

དེ་ཟླུག་ཟེརས་པ། ཕྲུ་གུས་མེ་མེའི་རྣ་མཆོག་ལ་འཐམ་སྟེ། འབྲུ་དམར་ལམ་བསྟན་གྱི་སྤྲུར་ ཁང་ལ་སླེབ་ཤིག་ཟེར་དེ་ཐངས་བཏངས་པ་སང། མེ་མེ་སྤྲུར་ཁང་གི་མདུན་ལ་བསླེབ་སྟེ་བླུ་ཞིག་བཏངས་སོ།

དེ་དཔའ་པོ་འི་ཐུག་རྗེ་ལ་ང་སྤྲུར་ཁང་དང་མཇལ།
སྤྲོག་ཤིང་ལ་ལྟ་ན་ཙན་དན་དམར་པོ་འི་འདུག་ལོ།
བུམ་པ་དེ་ལ་ལྟ་ན་རིན་པོ་ཆེའི་འདུག་ལོ།
སྐྱན་དར་བཀྲ་ཤིས་ཁ་དག་ནང་འདུག་ལོ།
གདན་ཁྲི་ལ་ལྟ་ན་ཕོ་ལད་ནང་འདུག་ལོ།

དེ་ཟླུག་ཟེར་གྱིན་ཞིག། ཤར་ ནུབ་ ལྷོ་ བྱང། ཚང་མ་ལ་ནས་འབྲུ་རེ་རེ་གཡོགས་བ། ལྷའི་ལྷ་མོ་ཁ་ཅིག་ཡོང་སྟེ། དེ་ཙུ་མེ་མེ་ལ

མཚམས་ཁང་ཞིག་གྱབ་སོང་། དེ་མཚམས་ཁང་ནང་དུ་མི་མི་མཚམས་ལ་འདུགས། དེ་ནས་མདའ་དཔོན་གྱི་སྤྲུ་གུ་རི་ལ་འཛེག་སྡེ་སོང་བ། རིའི་མགོ་ལ་བསླེབ་སྡེ་བལྟས་པ་སང་། དེ་རིའི་ནང་ནས་རྐྱང་སྡོང་ཟམ་དང་། འབྲོང་སྡོང་ཟམ་ཡོད་ཚུག། དེའི་ཁྲོ་ལ་སྤུ་ཏུ་ཞིག་ཟེམས་མགོ་ནས་མི་སྐྱོང་ཚོ་ཟམ་འབར་གྱིན་ཞིག་ཡོད་ཚུག། དེ་ལ་གདམ་ཡན་ལ་སྤྲུ་གུས་གླུ་ཞིག་བཏངས་སོ།

ཨ་ཇོ་འི་སྤུ་ཏུས་དངོས་ལ་ཉོན།
རྐྱང་ཁྲ་མི་ལོང་གིས་བདག་ལ་གསན།
འདི་རིང་ང་ལ་ཁ་དམན་ཡོངས།
སླིང་པའི་སྤྲུ་གུའི་ཁ་དམན་ཡོངས།
ང་དང་གི་མདའ་དཔོན་བཀོག་སྡེ་ཁྱེརས།
གོང་མ་བུ་ཚས་བཀོག་སྡེ་ཁྱེརས།
ང་དང་གཉིས་ཀ་མདའ་དཔོན་ལེན་བ་ཆེན།
ཧ་མི་གཉིས་ཀ་མདའ་དཔོན་བཀོག་པ་ཆེན།
ཁྲུད་ཟེར་ན་མདའ་དཔོན་ལེན་དེ་འཁྲུང་ཡིན།
མ་ཁྲུད་ཟེར་ན་སླིང་པའི་ར་རྫི་བཙོ་ཡིན།
ཨ་ཇོའི་ཧ་ཕོ་འབབ་སྡེ་ཤོག་ལོ།
རྐྱང་ཁྲ་མི་ལོང་འབབ་སྡེ་སྐྱོད་ལོ།

དེ་ནྱུག་ཟེར་པ་སང་། སྤུ་ཏུ་ལ་སློ་ཡོང་སྡེ། བྲག་མཐོན་པོ་ཞིག་གི་དཀྲིལ་ལ་སོང་སྡེ། གསེར། དངུལ། དུང་གི་ཙ་ཙོ་ཡོད་མཁན་ནི་ལྷ་སྐྱིན་བདན་ཡོད་པས། དེ་ཚང་མ་དང་མཉམ་པོ་འདུག་སོང་། དེར་ཡོད་

བའི་ཀྱང་དང་འབྲོང་ཚང་ས། ཕྲུ་གུའི་མདུན་ལ་ཡོང་སྟེ། འབྲོང་ཙ་ཙ་ཕྲུ་གུ་ཟེར་མཁན་དེས་ཕྲུ་གུ་ལ་གླུ་འདི་ལྟར་རོ།

སྙིང་པའི་ཕྲུ་གུས་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་ཕྲུ་གུས་བདག་ལ་གསན་ལོ།
ཁྱེ་རི་ཧ་དེ་ང་ཞེས་མ་མཐོང་ལོ།
ཀྱང་ཁྲ་མི་ལོང་ང་ཞ་ལ་མི་ཤེས་ལོ།
འདི་རིའི་རྩྭ་ཁ་ཟློ་སྟེ་འདུག་མཁན་ཡིན།
གཡའི་ཆུ་འཐུང་སྟེ་འདུག་མཁན་ཞིག་ཡིན་ལོ།
ཁྱོ་རང་གྱེན་ལ་ཚ་ན་གྱེན་ལ་སོང་ལོ།
ཁྱེ་རང་ཐུར་ལ་ཚ་ན་ཐུར་ལ་སོང་ལོ།

དེ་ནུག་ཟེར་ས་པ། ཕྲུ་གུས་ལན་དུ་གླུ་འདི་ལྟར།

ཁྱེད་ཀྱང་ཁྱུ་ཚང་མས་དངོས་ལ་ཉོན།
ཁྱེད་འབྲོང་ཁྱུ་ཚང་མས་བདག་ལ་གསན།
ངའི་ཕྲུ་ཙ་འདིར་ཡོད་ལོ་རིག་ཟེར་ན་རེ།
ཀྱང་ཁྲ་མི་ལོང་ཁྱེད་ཀྱི་ཁྲོ་ལ་ཡོད་ཟེར་ན་རེ།
ཁྱེད་ཀྱང་གི་ཀྱང་རབས་བཙད་ཡིན་ལོ།
ཁྱེད་འབྲོང་གི་འབྲོང་བས་བཙད་ཡིན།

དེ་ནུག་ཟེར་ས་པ། ཀྱང་དང་འབྲོང་ཚང་མ་ཡང་རི་ཕན་པ་ཞིག་ལ་ཤེར་ཏེ་སོང་། ཀྱང་རྒད་མོ་དེ་ཕྲུ་གུའི་མདུན་ལ་ཡོང་སྟེ་ཟེར་ས་པ། ཕྲུ་གུ་ལེ། ང་ལ་ཕྲུ་ཙ་ཞིག་ཡོད་པ། ཁོ་ནི་ཁྲོ་རང་གི་སྐད་ཆོར་དེ་བྲག་གི་དཀྱིལ་ལ་སོང་སྟེ། དེ་ཙ་ལྷ་སྲིན་ཚང་མ་དང་མཉམ་པོ་འདུག་སྟེ་མ་ཡོངས།

ཁྱོ་རང་ལ་ཐུབ་ན་འཁྱོང་བ་སོང་ཟེརས་པ། ཡང་ཕྲུ་གུས་ཟེརས། ཁྱོ་རང་ཁོའི་ཨ་མ་ཡིན་ན། ཁྱོ་རང་སོང༌། ཁྱོ་རང་དང་མཉམ་པོ་ཁོ་ཡོང་ཡིན་ཟེར་པ། དེ་ནས་རྒྱང་ཨ་མ་སོང་སྟེ། བྲག་གི་ཙ་ན་ཐ་རུ་ལ་གཏམ་ལན་གླུ་ཞིག་བཏངས་སོ།

ཨ་མའི་ཐ་རུས་དངོས་ལ་ཉོན་ལོ།
རྒྱང་ཁྲ་མི་ལོང་བདག་ལ་གསན་ལོ།
འདི་རིང་ཁྱེད་ཀྱི་བདག་པོ་བསླེབ་སྟེ་འདུག།
མདའ་དཔོན་ཕྲུ་གུ་བསླེབ་སྟེ་འདུག་ལོ།
ཁོ་ནི་ཁྱི་རི་བདག་པོ་ཡིན་ལོ།
ཁྱོ་རང་ཁོའི་འོག་ཏུ་ཞིག་ཡིན་ལོ།
ཁྱེ་རང་ཁོ་དང་འཛོམ་ན་ཟན་ལ་སྦྱགས་རིག་ཡིན་ལོ།
ཁྱེད་དང་ཁོ་འཛོམ་ན་མི་ཉན་ཚེས་མེད་ལོ།
ཨ་མའི་ཐ་རུ་འབབ་སྟེ་སྐྱོད་ལོ།
རྒྱང་ཁྲ་མི་ལོང་འབབ་སྟེ་སྐྱོད་ལོ།

དེ་ཟུག་ཟེརས། ཐ་རུས་ཨ་མ་ལ་གླུ་ཞིག་འདི་ལྟར།

ལྷ་ཨ་མ་རྒྱང་སྐོད་དངོས་ལ་ཉོན་ལོ།
རྒྱང་སྐོད་ཁྱེད་ཀྱིས་ངེད་ལ་གསན་ལོ།
ཁོལ་ཉེན་ཏུ་དགོས་ན་ཁྱོ་རང་སོང་ལོ།
ཁོའི་འོག་ཏུ་ཡིན་ན་ཁྱོ་རང་སོང་ལོ།
ངས་ཁོའི་ཉེན་ཏུ་གི་བཙོ་ལོ།
ང་འདིར་འདུག་མ་བཙུག་ན་སྟེང་ལྷ་ཡུལ་ལ་ཆེན་ལོ།

དཔང་པོ་རྒྱབ་ཞིན་གྱི་འོག་ཏ་ལ་ཆེན་ལོ།
ཁྲིད་ཚོར་ཚོར་མ་ཡོང་ཕར་ཕར་སོང་ལོ།

དེ་ཟུག་ཟེརས་པ། ཨ་ས་ཙུ་འིན་ཞིག་ཕྱིར་ལོག་སྟེ། ཕྲུ་གུའི་མདུན་ལ་ཡོང་སྟེ་ཟེརས། ངས་ཟེར་དེ་མ་ཡོངས། ཉིད་ལ་ཉན་ན་འཁྱོང་བསོང་ཟེརས་པ། ཕྲུ་གུས་མི་ཁུར་གཅིག་གི་སག་སྨུག་པོ་དེའི་རི་ལ་བོར་དེ། ཨ་མའི་རྩར་ལོག་སྟེ་ཡོང་སྟེ་ཨ་མ་ལ་ཟེར་པ། ཨ་མས་ཕྲུ་གུ་ལ་གླུ་ཞིག་བཏངས་སོ།

ཨ་མ་བའི་བུ་ཚས་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་གྱི་དུ་ཙེ་བདག་ལ་གསན་ལོ།
ནུབ་ལ་གཟིགས་བའི་རབ་གསལ་པོ་འི་ནང་ན།
རབ་གསལ་གྱི་སྒོ་དེ་གཡུ་ལ་བསྒྲུབ་ཡོད།
ཀུ་ལིག་དེ་ནི་དངུལ་ལ་ཡོད་ལོ།
དེ་བོ་ཕྱེ་སྟེ་ནང་ལ་སོང་ལོ།
དེའི་ནང་ལ་ཟངས་ཀྱི་སྒམ་ཆུང་ཞིག་ཡོད་ལོ།
དེའི་ནང་དུ་ཟངས་ཀྱི་དབྱུག་རྡོ་བ་ཞིག་ཡོད་ལོ།
དབྱུག་མཐིལ་ནང་དུ་ཤེལ་གྱི་རྡོ་བ་ཆེ་ཆུང་གསུམ་ཡོད་ལོ།
རྡོ་བ་ཆེ་ཆེ་འབྲོང་ཙུ་ཙུ་ཕྲུ་གུའི་ཙུ་ཙོལ་རྒྱབ་ལོ།
རྡོ་བ་བར་པ་དེ་རྐྱང་རྒོད་ལ་རྒྱབ་ལོ།
རྡོ་བ་ཆུང་ཙུ་རེ་རྐྱང་ཁྲ་མི་ལོང་གི་རྣ་མཆོག་ལ་རྒྱབ་ལོ།
རྣ་མཆོག་ལ་ཟི་གང་དགུ་ཟམ་ཕུད་ལོ།
དེ་ནས་ཐ་རུ་འབབ་སྟེ་ཡོང་ཡིན།

དེ་ཐུག་ཟེར་དེ་ཨ་མས་བསླབས་པ་སང་། ཕྲུ་གུས་དེ་སྒོ་ཕྱེ་སྟེ་ནང་ལ་སོང་སྟེ་བལྟས་པ། དགྲུག་རྡོ་བ་ཡོད་ཚུག། དེ་བོ་འཁྲུར་དེ་ཡོང་སྟེ་བུ་ཙུ་ཡོད་ས་ཙུ་སོང་སྟེ། བྲག་གི་ཙ་ན་བུ་ཙུ་ལ་གཏམ་ལབ་གླུ་ཞིག་བཏངས་སོ།

ཨ་ཇོ འི་བུ་ཙུས་དངོས་ལ་ཉོན་ལོ།
ཀྱང་ཁྲ་བའི་མི་ལོང་བདག་ལ་གསན་ལོ།
གླིང་གི་སྣང་ཕྲུག་ཀུན་གྱིས་ང་ལ་ཁ་དམན་ཡོངས།
བུ་ཙུ་འབབ་སྟེ་སྐྱོད་རིགས་མཛད་ལོ།
གལ་དེ་མི་ཡོང་རིག་ཟེར་ན་རེ།
ཕྱུག་གཡས་པའི་ནང་དུ་དགྲུག་རྡོ་བ་ཞིག་ཡོད་ལོ།
ཟངས་ཀྱི་དགྲུག་རྡོའི་ནང་ན་ཤེལ་གྱི་རྡོ་བ་ཆེ་ཆུང་གསུམ་ཡོད་ལོ།
རྡོ་བ་ཆེ་ཆེ་དེ་འབྲོང་ཙུ་ཙུ་ལུ་གུ་ལ་བཀྲབ་ཡིན།
འབྲོང་གི་ཙུ་ཙོ་ལ་ཁག་པོ་དགུ་ཟམ་ཕྱུད་ཡིན།
པོ་གཅིག་དེ་སྟེང་ལྷ་ཡུལ་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་བར་བཙན་ཡུལ་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་འོག་ཀླུ་ཡུལ་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་གསེར་པོ འི་གསེར་རི་ལ་ཕྱུལ་ཡིན།
པྲོ་གཅིག་དེ་སྔོན་པོ འི་གཡུ་རི་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་ཕ་ལྷ་ཀར་རྫོང་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་མ་ལྷ་བཀུར་དམན་ལ་ཕང་ཡིན།
པོ་གཅིག་དེ་ཨ་བ་གི་སར་ལ་ཕང་ཡིན།

ཕོ་གཅིག་དེ་གླིང་གི་དཔའ་བོ་ཚང་མ་ལ་ཕང་ཡིན།
རྫོ་བ་བར་པ་དེ་ཀྲུང་ཀོད་དེའི་དཔལ་བ་ལ་རྒྱབ་ཨིན།
དཔལ་བ་ལ་རྒྱབ་སྟེ་ལྡད་བའི་ཆར་པ་ཕབ་ཡིན།
རྫོ་བ་ཆུང་ངུན་དེ་ཀྲུང་ཁྲ་མེ་ལོང་གི་ཛ་མཆོག་ལ་རྒྱབ་ཡིན།
ཛ་མཆོག་ལ་བྲུ་གང་དགུ་ཟམ་ཕུད་ཡིན།

དེ་ཟླུག་ཟེར་གྱིན་ཞིག་དང་དབྱུག་རྫོ་བ་བརྒྱབས་པ་སང༌། རྫོ་བ་ཆེན་པོ་དེ་འབྲོང་ལ་ཕོག་སྟེ་རྡུ་ཙོ་ཆག་སོང༌། རྫོ་བ་བར་པ་དེ་ཀྲུང་ཀོད་ལ་ཕོག་སྟེ་ཤི་སོང༌། རྫོ་བ་ཆུང་ངུན་དེ་ཀྲུང་ཁྲ་མེ་ལོང་གི་ཛ་མཆོག་ལ་ཕོག་སྟེ་བྲུ་གང་དགུ་ཕུད་བཏངས་པ། ཐ་རྡུ་འཛིག་སྟེ་འབབ་སྟེ་ཡོང་ནས། ཁོང་ཀྲུང་དང་འབྲོང་གི་ཁྲུ་ནང་དུ་སོང་སྟེ། ཐ་རྡུས་ཕྲ་ཀུ་ལ་གླུ་ཞིག་འདི་ལྟར།

ཕྲ་གླིང་པའི་ཕྲ་ཀུ་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་གྱི་ཕྲ་ཀུས་བདག་ལ་གསན་ལོ།
ཁྱོད་ལ་ང་ཐོབ་པའི་དགའ་སྟོན་ཞིག་རྫོང་ལོ།
གླིང་གི་དཔའ་བོ་ཀུན་ལ་དགའ་སྟོན་ཞིག་རྫོང་ལོ།
དེའི་དགའ་སྟོན་བཏང་སྟེ་ན།
ང་ནི་ཁྱེད་ཀྱི་འོག་རྟ་ལ་འགྱུར་ཡིན་ལོ།
ཁྱེད་དང་ང་འཛོམ་ཟེར་ན་སྟེང་ལྷའི་ཡུལ་ལ་ཆ་ཐུབ་ཡིན།
བར་བཙན་ཡུལ་ལ་ཡང་ཆ་ཐུབ་ཡིན།
འོག་ཀླུ་ཡུལ་ལ་ཡང་ཆ་ཐུབ་ཨིན།
རྒྱལ་པོ་ཀེ་སར་པ་སང་དཔག་ཚད་གཅིག་ང་དང་མགྲོ་ཡིན།

ཟླུག་ཟེར་ས་པ་སང། ཕྲ་ཀུས་ཐ་རྡུ་བོར་དེ། ཁང་ཐོལ་ཡོང་སྟེ།

ཨ་མ་ལ། ཕུ་ཙས་ཙི་ཟེར་མཁན་ཚང་མ་ཟེརས་པ་སང་། ཨ་མས་ཤར་གྱི་ཏ་སྒོ་ཕྱེས། ལྷོ་འི་ཏ་སྒོ་ཕྱེས། ནུབ་ཀྱི་ཏ་སྒོ་ཕྱེས། བྱང་གི་ཏ་སྒོ་ཕྱེ་སྟེ་ཤ་སྐྱིང་མར་སྐྱིང་ཚང་མ་ཕིང་སྟེ། གླིང་པའི་དཔའ་བོ་ཚང་མ་ལ་དགའ་སྟོན་བཏངས་སོ། དེ་ནས་ཕུ་ཙ་རི་ནས་འབབ་སྟེ་ཡོང་ནས་རང་གི་དྲུང་ཁྲིས་ལ་ཡོང་སྟེ། ཕྲུ་གུས་ཕུ་ཙ་མཐོང་སྟེ་མང་པོ་འཐད་སོང་། ཕུ་ཙས་ཕྲུ་གུ་མཐོང་སྟེ་མང་པོ་འཐད་སོང་། དེ་ནས་ང་ཞ་ཏ་མི་གཉིས་ཀ་ཆེན་ཨ་མ་ལི་ཟེརས་པ། ཨ་མས་ཕྲུ་གུ་ལ་གླུ་ཞིག་བཏངས་སོ།

ཨ་མའི་བུ་ཚས་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་གྱི་བུ་ཚས་བདག་ལ་གསན་ལོ།
ཁ་བ་ཤར་ལ་ཡོད་པའི་རབ་གསལ་པོ་འི་ནང་ན།
རབ་གསལ་གྱི་སྒོ་དེ་གསེར་ལ་ཡོད་ལོ།
ཀུ་ལིག་དེ་གཡུ་ལ་ཡོད་ལོ།
ཀུ་ལིག་ཕེ་སྟེ་ནང་ལ་སོང་ལོ།
དེའི་ནང་ལ་གསེར་གྱི་སྒམ་གཉིས་ཡོད་ལོ།
སྒམ་ཅིག་གི་ནང་དུ་ཁྱེ་རང་གི་གོན་ཅས་ཡོད།
དེ་བོ་ཕིང་སྟེ་ཁྱེ་རང་གིས་གོན་ལོ།
སྒམ་ཅིག་གི་ནང་དུ་ཕུ་ཙུའི་སྒ་ཆ་ཡོད་ལོ།
དེ་བོ་ཕིང་སྟེ་ཕུ་ཙ་ལ་སྟོད་ལོ།
དེ་ནས་ཁྱེད་གཉིས་པོ་གར་ཆ་ནའང་སོང་ལོ།

ཨ་མས་དེ་ཟུག་ཟེརས་པ་སང་། ཕྲུ་གུས་སྒོ་ཕྱེ་སྟེ་ནང་ལ་སོང་པ་སང་། སྒམ་ནང་ནས་སྒ་ཕིང་སྟེ་ཕུ་ཙ་ལ་བསྟད་སོང་། གོན་ཅས་ཕིང་སྟེ་

ཁྲོ་རང་གིས་གཏོན་སོང༌། དེ་ནས་ཁོང་གཉིས་ཀ་ལྷུང་ཡུལ་ཕྱོགས་ལ་ཟླ་བ་དང་ཉི་མའི་མཚམས་ནས་སོང་བའི། སྔོན་ལ་སོང་བའི་གླིང་པ་ཀུན་བྱེ་ཐང་དེ་རུ་འདུག་སྐྱེ་ཡོད་ཚུག་པས། ལྟ་བ་མིག་གི་རབ་ལྷ་དེས་ནས་མཁའི་ལྟོང་ནས་ཁོང་ཧ་མི་གཉིས་ཀ་ཡོང་ཙེས་མཐོང་སྐྱེ། ཨ་གུ་དཔལ་ལེ་ལ་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

ཨ་གུ་དཔལ་ལེས་དངོས་ལ་ཉེན་ལོ།
དཔལ་ལེ་ཁྲོད་པོས་བདག་ལ་གསན་ལོ།
ནམ་མཁའི་ལྟོངས་ནས་ཧ་མི་གཉིས་ཡོང་འདུག།
ཧ་ལ་ལྟ་ན་རྒྱང་ཁྲ་མེ་ལོང་མཚོགས་ཤིག་འདུག་ལོ།
མི་ལ་ལྟ་ན་མདའ་དཔོན་ཕྲུ་གུ་མཚོགས་ཤིག་འདུག་ལོ།
ཨ་གུ་དཔལ་ལེ་བསྐུ་སྐྱེ་སོང་ལོ།
མེ་ཞིག་ཕྲུ་སྐྱེ་ཛ་ལ་རྩ་ཁ་ཞིག་དོང་ལོ།

དེ་ཟུག་ཟེརས་པ། ཨ་གུ་དཔལ་ལེས་ཞིབ་ཆ་བལྟས་པ། ཅི་འང་མ་མཐོང་སྐྱེ། ལར་དུ་གླུ་ཞིག་བཏངས་སོ།

མི་དང་ཀུན་གྱི་ཁྲིམས་ལ་མཚན་འདྲ་མཐོང་ཡིན་ལོ།
ཁྱེད་ཀྱི་ཁྲིམས་ལ་ཉེན་འདྲ་ཞིག་མཐོང་ང།
ངས་བལྟས་པ་ཅི་འང་མ་མཐོང་ལོ།

དེ་ཟུག་ཟེརས་པ། ལྟ་བ་མིག་གི་རབ་ལྷ་ལ་སྨྲ་ཡོང་སྐྱེ། ཕྲུ་ཐུངས་གཅིག་གི་ནང་མགོ་བཏངས། ཕྲུ་ཐུངས་གཅིག་གི་ནང་དུ་ཀང་པ་བཏང་སྐྱེ་གཉིད་ལོག་སྐྱེ་འདུགས་སོང༌། ཨ་གུ་དཔལ་ལེ་འཛིག་སྐྱེ་ལྟ་རིན་ཞིག་འདུགས་པ། བདེན་པ་ནམ་མཁའ་ནས་ཡོང་ཙེས་མཐོང་སོང༌། དེ་ནས

ཨ་ཁུ་དཔལ་ལེས་མགྲོགས་པ་ཕོག་ཀལ་ཅོར་འཁུར་ཏེ་བསྒུ་བ་ལྷ་སོང། དེ་རྨུག་པ་ཉེ་མོ་ལ་བསྙེབ་སོང་བས། ཨ་གུས་ཁ་འཛམ་པོ་ཀོལ་གྱིན་ཞིག་གླུ་འདི་ལྟར།

ཨ་གུའི་ཚ་བོ་གནམ་སྐྱོད་ལོ།
མདའ་དཔོན་སྤུས་བྲུ་གནས་སྐྱོད་ལོ།
ཉིད་རང་ཀྱང་ཅན་ཡོད་བསང་དགོངས་པ་ཡིན་པ།
ཉིད་མངལ་དེ་ཡོད་ན་མངལ་ཚོ་མཛད་ལོ།
ཉིད་སྐྱེམས་དེ་ཡོད་ན་སྐྱེམས་ཤིག་ཡོད་ལོ།
ཉིད་རིམ་སྟེ་ཡོད་ན་འདོན་དང་ཞིག་ཡོད་ལོ།
གུ་ལེམ་ཕེབས་འདང་ཚ་བོ་ལེ།

དེ་ཧྲུག་ཟེརས་པ། མདའ་དཔོན་གྱི་ཕྲུ་གུས་ལན་དུ་གླུ་ཞིག་འདི་ལྟར།

ཁྱོད་དཔལ་ལེ་ཁྲི་ཀན་དངོས་ལ་ཉིན་ལོ།
ང་ལ་ལྟོགས་ཙམ་མངལ་ཙམ་སྐྱེམས་ཙམ་མེད།
ལྟོགས་ན་ཟན་དེ་ཁྱེད་ཀྱིས་ཟོ།
སྐྱེམས་ན་ཆུ་དེ་ཁྱེད་ཀྱིས་འཐུང་།
མངལ་ན་མངལ་ཚོ་ཁྱེད་ཀྱིས་དོང་།
ངའི་མདའ་དཔོན་ཅི་ལ་བཀོགས།
མི་མ་ཤི་བ་མཛུག་ཅི་ལ་བཙདས།
དམ་ཤི་བ་སྨོག་ཅི་ལ་བགྲགས།

དེ་ཧྲུག་ཟེར་གྱིན་ཞིག་སོང་སྟེ་པོང་མ་བུ་ཚའི་ཐོངས་ཙ་ལ་འཕམ་སྟེ། ཚོང་གཉིས་ཀ་འཛིང་མོ་བཏང་གིན་ཞིག་བྱོ་རེ་རྨུག་པ་ལུས་སོང་། དེ་ནས་

རྒྱལ་བུ་ཤེལ་དཀར་བཞང་སྟེ་ཁྲིང་གཉིས་ཀ་ཕྱེས་སོང༌། དེ་ནས་ཁྲིང་ཚོམ་ཀ་མཐུན་དེ་ཞེ་དུགས་པ། དེ་ཙུག་པ། ལྷུངས་སི་རྣམ་རྒྱལ་པོ་འི་ཕྲུ་མོ་ལྷུང་ས་གཡུའི་ཚོ་རོན་མོ། ཀློ་ཀྲབ་རྒྱལ་པོ་ཟེར་མཁན་ཞིག་གིས་ཞགས་མ་ལ་ཁྲིང་ངེད་ཙུག། ཀློ་ཀྲབ་རྒྱལ་པོ་ལ་བྱེ་ཐང་གི་ནང་དུ་གླིང་པའི་མི་ཡོད་ཅེས་མཐོང་སྟེ། རང་གི་དམག་མི་ཀུན་ལ་ཟེརས་པ། ཕྲ་དཔའ་བོ་ཀུན། ང་དང་མེན་པ་ཡང་ཡུལ་ལ་དཔའ་བོ་ཡོད་ད་མེད་ཟེརས་པ། ཁོ་འི་དཔའ་བོ་མི་དབང་རལ་ཆེན། མི་དབང་རལ་ཆུང་ཟེར་མཁན་རེ་ཡོད་ཙུག་པ། ཁྲིང་གིས་ཟེརས་པ། ང་དང་བ་སང་དཔའ་བོ་ཞིག་སུ་ཡང་མེད་འགྲོ། ང་དང་ལ་རྒྱུ་ཆེན་མོ་ཡོད་ན་འཐུང་ཐུབ་ཡིན། རི་ཆེན་པོ་ཞིག་ཡོད་ན་ང་དང་ལ་ལྷུར་ཉན་ཡིན། ང་དང་བས་རྩལ་ཅན་ཞིག་སུ་ཡང་མེད་ལེ་ཟེརས་པ། ཀློ་ཀྲབ་རྒྱལ་པོ་ལ་བྱེ་ཐང་གི་ནང་ན་གླིང་པའི་ཕྲུ་གུ་ཀུན་གྱིས་མདའ་རྩེས་དང་གཞུ་རྩེས་བདང་ཅེས་མཐོང་སྟེ། སྤྲོ་ཡོང་སྟེ་ཁྲིད་ཚང་མས་རྫུན་བཏངས་ཡ་བྱེ་ཐང་གི་ནང་ནས་ཕྲུ་གུ་ཁ་ཅིག་གིས་མདའ་རྩེས་གཞུ་རྩེས་བདང་འདུག། ཁྲིང་ཡང་དཔའ་བོ་རེ་ཡིན་འགྲོ། ཟེར་དེ་རང་གི་དམག་ཚང་མ་མལ་མལ་ལ་བཅིང་སྟེ་བོར་སོང༌། མི་དབང་རལ་ཆུང་གིས་རྒྱལ་པོ་ལ་ཞུས་པ། རྒྱལ་པོ་ལེ། དེའི་ཕྲུ་གུ་ཀུན་གྱི་མགོ་ལག་བཅད་དེ་ཉེ་རང་གི་མདུན་ལ་འཁྲིད་བ་ང་ཆེན་ལེ་ཟེརས་པ། རྒྱལ་པོས་དེ་ཟླུག་འཁྲིད་ན་གྲིག། ཁྲོ་རང་ཆ་དགོས་ཟེརས་པ། དེ་ནས་ཁོ་ཕྲུ་གུ་ཡོད་ས་རྩ་ད་ནག་པོ་ཞིག་ལ་ཞེན་དེ། རལ་བ་དེ་ས་ལ་ཕབ་སྟེ་སོང་བས། གླིང་པ་ཀུན་ལ་དེ་མི་ཡོང་ཅེས་མཐོང་སྟེ། གཅིག་ལ་གཅིག་གིས་ཟེརས་པ། ཨ་དངོས་ཕྱོགས་ན་བདུད་ཅིག་ཡོང་འདུག། ཁོས་ང་དང་ལ་སྐྱད་བདང་མཁན་ཞིག་ཡིན་ནམ།

ཁྲོལ་གདམ་ལན་ཟེར་ཅེས་ལ་སྤུ་ཆེན་ཟེར་པ། དེ་ནས་གོང་མ་བྲུ་ཚ་ལ་སོང་ཟེརས་པ། མདའ་དཔོན་གྱི་བྲུ་ཚ་ལ་སྒྲོ་ཡོང་སྨེ་ཟེརས། ད་རུང་ཡང་ཁྲོ་བདང་ཡིན་ན། ད་ལྟ་ང་རང་ཆེན་ཟེར་ནས་ཁྲོ་སོང་། དེ་ནས་བདུད་ཀྱི་མདུན་ལ་བསྐྱིབ་པ། ཆུའི་ཕར་ཁ་ནས་བདུད་ཀྱིས་ཕྲུ་གུ་ལ་གླུ་ཞིག་བདངས་སོ།

ཆུའི་ཕར་ཁའི་ཕྲུ་གུས་དངོས་ལ་ཉོན་ལོ།
ཧ་ཆུང་ལ་ཞེན་པའི་མི་ཆུང་བདག་ལ་གསན།
ཁྱོད་ཡོང་ཡོང་གང་གི་ཡུལ་ནས་ཡོངས་ལོ།
ཁྱེད་འགྲོ་འགྲོ་གང་གི་ཡུལ་ལ་འགྲོ་ཆེན་ལོ།
ཕ་ལ་ཁ་ཆེམས་བོར་དེ་ཡོངས་ས།
མ་ལ་མི་ངན་བསྐལ་དེ་ཡོངས་ས།
ཟོས་བདང་ན་ཁ་མི་གང་ལོ།
བསྟམ་སྐྱེ་བདང་ན་སྦྲལ་མི་གང་ལོ།
ལྷད་བདང་ན་སོ་མི་གང་ལོ།
ཁྱེད་ལ་ཟན་མེད་ན་ཟན་ཞིག་བདང་ཡིན།
ཁྱེད་ལ་གོས་མེད་ན་གོས་སྔོན་ཡིན།
ཁྱེད་ཚུར་ཚུར་མ་ཡོང་ཕར་ཕར་སོང་ལོ།
རང་སྒྲོག་འཁྲུར་དེ་རང་ཡུལ་ལ་སོང་ལོ།

དེ་ནུག་ཟེརས་པ། གླིང་ཕྲུག་གིས་ལན་དུ་གླུ་འདི་ལྟར།

ཆུའི་ཕར་ཁའི་མི་ཆེན་ཁྱོད་དངོས་ལ་ཉོན།
ཧ་ཆེན་གྱི་མི་ཆེན་བདག་ལ་གསན་ལོ།

ང་ཞ་ཡོང་ཡོང་རྒྱ་དར་ཙོ་གཞུང་ནས་ཡོངས།
ང་ཞ་འགྲོ་འགྲོ་ཁྲི་རྒྱ་མཚོ་ཆེན་མོ་ལ་འགྲོ་ཡིན།
རྒྱ་མཚོ་ཆེན་མོ་ལ་ཞབས་སྐོར་ལ་ཆེན་ལོ།

ཟེར་པ། བདུད་ཀྱིས་གླུ་ཞིག་འདི་ལྟར།
ཁྱོད་ཧ་ཆུང་མི་ཆུང་དངོས་ལ་ཉོན་ལོ།
མི་དབང་རལ་ཆུང་ང་རང་ཡིན་ལོ།
མི་དབང་རལ་ཆེན་རྡིང་ན་ཡོད་ལོ།
དཔའ་བོ་གསུམ་སྟོང་ལྔ་བརྒྱ་ཡོད་ལོ།
རི་བོ་པང་དུ་ལེན་པའི་དཔའ་བོ་ཡོད།
རྒྱ་མཚོ་ཧུབ་འཐུངས་ཟེར་བའི་དཔའ་བོ་ཡོད།
ཁྱེད་རང་སྒྲོག་འཁུར་དེ་རང་ཡུལ་ལ་སོང་ལོ།

དེ་ཟུག་ཟེརས་པ། ཕྲུ་གུས་གླུ་ཞིག་པདངས་སོ།
ཆུ་ནང་ཕ་རོལ་ལི་ཧ་ཆེན་མི་ཆེན་དངོས་ལ་ཉོན།
ང་ཞ་ཡོང་ཡོང་གླིང་མཁར་སྟོད་ནས་ཡོངས།
ང་ཞ་འགྲོ་འགྲོ་ལྡོང་ཡུལ་མཐིལ་ལ་ཆེན་ལོ།
ལྡོངས་སི་དམ་རྒྱལ་པོ་ལ་བུ་མོ་ཞིག་འདུག་ལོ།
ལྡོངས་གཡུའི་ཚོ་རོན་མོ་ཡོད་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་ལ་མདུན་མ་ལ་ཞུ་ཡིན།
བདང་ལོ་ཟེར་ན་རིན་མཐོ་ཤེལ་དེ་འཁྱོང་ཡིན་ལོ།
མི་བདང་ཟེར་ན་འཐབ་མོ་བདང་སྡེ་འཁྱོང་ཡིན་ལོ།
ཁྱེད་ལ་མེན་ནས་དཔའ་བོ་རིག་མེད་ད་ལོ།

ང་ཞི་ལ་དཔའ་བོ་ཁ་ཅིག་ཡོད་ལོ།
གླིང་རྒྱལ་ལྷམ་ཆེན་མོ་དིང་ན་ཡོད།
རྒྱ་སྒོ་ལ་ཤིང་སྤྱི་སྣ་ཆ་ཞིག་བསྡད་འདུག།
ཀྱང་གོད་དབྱེར་པ་ལ་སྣ་ཆ་རིག་བསྡད་འདུག།
ཨ་ཀུ་དཔལ་ལེ་དིང་ན་ཡོད་ལོ།
རྒྱ་སྒོ་ལ་ཤིང་སྤྱི་སྣ་ཆ་ཞིག་བསྡད་འདུག།
དུང་རི་དར་དཀར་ལ་སྣ་ཆ་བསྡད་འདུག།
དཔལ་མོ་འི་ཨ་སྟག་དིང་ན་ཡོད་ལོ།
རྒྱ་སྒོ་ལ་ཤིང་སྤྱི་སྣ་ཆ་བསྡད་འདུག།
ཉག་ཁྲ་གློ་རིང་ལ་སྣ་ཆ་བསྡད་འདུག།
ཨ་ཀུ་གཉི་གོན་བོ་དིང་ན་ཡོད་ལོ།
རྒྱ་སྒོ་ལ་ཤིང་སྤྱི་སྣ་ཆ་བསྡད་འདུག།
སྤོ་རིག་གི་པོན་པོན་ལ་སྣ་ཆ་བསྡད་འདུག།

དེ་ནུག་ཟེརས་པ་སང། བདུད་ལ་སྨྲོ་ཡོང་སྤྱི་ཕྲུ་གུ་ལ་མདུང་ཞིག་རྒྱབ་སྤྱི་མགོ་རྩེ་ལ་ཐོག་སྤྱི་ལྷོད་རྩེལ་ཐུག་བཙུགས་པ། ཨ་ནེ་བཀུར་དམན་རྒྱལ་མོ་ཡོང་སྤྱི་མདུང་ཕུད་དེ་ཕངས་བདངས་པ། ཕྲུ་གུ་མགྱོགས་པ་ཡང་སྤྱི་སླུ་ཞིག།

ཨ་ཚ་ཚ་བདུད་ངན་ནི་རྒྱབ་ཚུལ་ལ་ལྷོས་འདང།
ཨ་ཚ་ཚ་མདུང་ངན་ནི་ཐོག་ཚུལ་ལ་ལྟོས།
མགོ་རྩེ་བཙག་སྤྱི་ལྷོད་རྩེ་ལ་ཐུག་ལོ།

སྤྱང་སྤྱོད་མཐོན་པོ་ན་ལྷ་མག་མང་པོ་ཡོད་ལོ།
ལྷ་མག་ལ་རླུངས་པོ་ཐོག་པ་དང་འདྲ་ལོ།

དེ་ཟུག་ཟེརས་པ་སང། བདུད་ཀྱིས་མདའ་བཏངས། ཁྲུ་གུའི་འབྲང་རྩེ་བཙག་སྟེ་སྙིང་རྩེ་ལ་ཐུག། ཡང་ཨ་ནེ་བཀུར་དམན་མོ་ཡོང་སྟེ། མདའ་ཕུད་དེ་ཕངས་བཏངས་པ་སང། ཁྲུ་གུ་མགྱོགས་པ་ལངས་ཏེ་སག་སྨུག་ཁྱིང་སྟེ་མདའ་བཏངས་པ། མདའ་མ་རྒྱག་སོང། དེ་ནས་ཁྲུ་གུས་ཧ་ཕོ་ཡོང་ཞིག་ལ་བདག་སྟེ་ན། ཕོ་ཡོང་གི་ཕག་ལ་འདུག་སྟེ་ཙུ་འིན་ཞིག་ཨ་བྲ་ལ་བོས་སིན་ཞིག་གླུ་འདི་ལྟར།

བུ་ཚའི་ཨ་བས་འང་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་གོང་མས་བདག་ལ་གསན་ལོ།
འདི་རིང་ཁྱེད་ཀྱི་བུ་ཚ་བདུད་ཀྱི་ལག་ཏུ་ཤི་ཙུག།
མདའ་དཔོན་གྱི་དྲ་ཙེ་བདུད་ཀྱིས་བསད་འདུག།
ཨ་བས་གཟིགས་པ་ཡོད་ན་གཟིགས་རོགས་མཛོད་ལོ།
ཨ་བས་མཐོང་ས་རིག་ཡོད་ན་དྲ་ཙེ་ལ་ལྟོས་ལོ།
བདུད་ལ་མདའ་བཏང་ཅེས་ལ་མ་རྒྱག་ལོ།

དེ་ཟུག་ཟེརས་པ། ཨ་བྲ་ནས་མཁའི་ལྡིངས་ན་བྱ་རིགས་མང་པོས་རེད་དེ་འཁྱེར་རད་ཙུག། ཁྲུ་གུ་དེ་ཙ་ཙུ་ཅེས་མཐོང་སྟེ་བུ་ཚ་ལ་ལན་དུ་གླུ་ཞིག་བཏངས་སོ། ཨ་བའི་བུ་ཚས་དངོས་ལ་ཉོན་ལོ།

མདའ་དཔོན་གྱི་དྲ་ཙེས་བདག་ལ་གསན་ལོ།
ང་ནི་བུ་ཚའི་མདུན་ལ་ཡོངས་པ་རིག་མི་འདུག་ལོ།
རི་ག་མཐོན་པོ་ཅི་ཁ་ཕེམ་གན་ལོ།

རྒྱམ་མཚོ་ཆེན་མོ་ནས་འབུབ་རྒྱུ་མ་འཁྲུང་ལོ།
ཐྲོས་སེད་ཟེར་དེ་གཉན་ཉི་རོག་སྦུམ་ཁྲིལ།
ངལ་ལེད་ཟེར་དེ་རྡ་ཐོག་ནས་མ་བབས།
ཡང་ཚང་མའི་མདའ་མོ་གསུམ་བཅུ་སོ་བརྒྱད་ཡོད་ལོ།
ང་དང་གི་མདའ་མོ་བརྒྱ་ཟམ་ཡོད་ལོ།
གཡས་ཀྱི་སག་སྨུག་པའི་ནང་ན་མདའ་རབས་ཡོད།
མདའ་རབས་དེ་ཉི་གཟིལ་དགོས་ཡིན།
གཡོན་གྱི་སག་སྨུག་པའི་ནང་ན་གཞུའི་གཞུ་རབས་ཡོད།
གཞུ་རབས་དེ་ཉི་གསིལ་དགོས་ཡིན།
མདའ་རབས་གཞུ་རབས་གསིལ་ན་རེ།
ཁྱེད་ལ་མངའ་བདང་ངོ་རྟོགས་ཡིན།

དེ་ཟླུག་ཆོར་དེ། ཕྲུ་གུས་སག་སྨུག་གི་ནང་དུ་བལྟས་པ་སང། དེའི་ནང་ནས་མདའ་རབས་དང་གཞུ་རབས་གསལ་པོ་ཡོད་ཚུག། དེ་བོ་གསིལ་དེ། མདའ་དང་གཞུ་ཁྱེར་དེ་རྒྱུའི་མཐའ་མ་ལ་སོང་སྟེ། བདུད་ལ་སླུ་ཞིག་བཏངས་སོ།

ཁྱེད་བདུད་ངན་གྱིས་དངོས་ལ་ཉོན་ལོ།
སྦུ་ཚའི་གཡས་ཀྱི་མདའ་དོང་པོ་འི་ནང་ན།
མདའ་མོ་གསུམ་སྟོང་ལྔ་བརྒྱ་རིག་ཡོད་ལོ།
དེའི་ནང་ནས་ཁྱེས་པའི་མདའ་མོ་གསུམ།
མདའ་མོ་དཀར་པོ་འི་ལམ་བསྟན་གཅིག།
མདའ་མོ་དམར་པོ་འི་ཁྲག་ལྷགས་གཅིག།

མདའ་མོ་ནག་པོ་ འི་སྒྲོག་གཅོད་གཅིག །
ཕྲུ་ཚའི་གཡོན་གྱི་གཞུ་རྡོང་པོ་ འི་ནང་ན།
བཞུ་མོ་གསུམ་སྟོང་ལྷ་བརྒྱ་ཡོད་ལོ །
དེའི་ནང་ནས་ཕྱེས་པའི་གཞུ་མོ་གསུམ །
གཞུ་སྟོད་གསེར་ལ་བཅོས་མཁན་ཡོད །
བཞུ་དཀྱིལ་དུང་ལ་བཅོས་མཁན་ཡོད །
གཞུ་མཐུག་གཡུ་ལ་བཅོས་མཁན་ཡོད །
ཚང་ཟླུམས་སྒྲིན་པོ་ འི་འབྲང་རྒུས་ཡིན །
ཚོམ་སྤྱག་སྒྲིན་པོ་ འི་མིག་རྒུས་ཡིན །
གཞུ་རྒྱུད་སྒྲིན་པོ་ འི་ཤུལ་རྒྱུས་ཡིན །
བདང་ནའང་མི་བདང་བྲ་ཚོམས་ཡོད །
བདང་བ་ནས་ཕར་ལ་མི་འཕོག་ཅས་མེད་ལོ །
བདུད་ཤ་མ་སྨུང་བ་ལོ་དགུ་ཟམ་སོང་ལོ །
བདུད་ཁྲག་མ་སྨུང་བ་ལོ་དགུ་སོང་ལོ །
ད་ནི་བདུད་ཤ་སྨུང་ཅས་སོང་ལོ །
ད་ནི་བདུད་ཁྲག་སྨུང་ཅས་ཡིན །
ཞིབ་ཞིབ་ལྷུངས་པོ་ལ་བཀལ་ཅས་ཡིན །
རྫིང་རྫིང་རྩུ་ལ་བཀལ་ཅས་ཡིན་ལོ །

དེ་ཟླུག་ཟེར་དེ་ན། ཕྲུ་གུས་མདའ་ཞིག་བདངས་པ་སང་། བདུད་ཀྱི་མགོ་ནས་ཀཎ་དུ། ཀང་ནས་མགོ་ལ་རྒྱབ་སྟེ། བདུད་དེ་སྒྲིབ་ཅིག་ལ་ཤི་སོང་། ཀློ་ཀྲབ་རྒྱལ་པོ་དང་དཔག་ཚང་མ་ལ། མི་དབང་ར[illegible]ཆུང་ཤི

ཅེས་མཆོང་སྟེ། ལྷུང་ས་གཡུའི་ཆོ་རོན་མོ་ཇོ་ཇོས་རྒྱལ་པོ་ལ་གླུ་ཞིག་བཏངས་སོ།

མི་ཆེན་གོང་མས་དངོས་ལ་ཉོན་ལོ།
ལྷོ་ཀྲབ་རྒྱལ་པོས་བདག་ལ་གསན་ལོ།
ཁྱེད་རྩ་བ་མེད་པའི་སྤང་རྩྭ་ཞིག་ཡིན་ནོག།
ཁྱེད་རྣ་མཆོག་མེད་པའི་བོང་བུ་ཞིག་ཡིན་ནོག།
དེའི་ཕྲུག་ཀུན་གླིང་པའི་དཔའ་བོ་རིག་ཡིན་ལོ།
ཁྱེད་ཀྱིས་ཁོང་ལ་འགྲན་དེ་ཉམ་ཙམ་རིག་མེད་ལོ།
ཁྱེད་ཀྱིས་རང་སྒྲོག་ཁུར་ནས་རང་ཡུལ་ལ་འགྲུལ་ལོ།
ཇོ་ཆུང་ཅུན་དང་ཁྲེར་ཆུང་ཅུན་ལ་ཆོད་མ་ལྷ་ལོ།

དེ་ཟླུག་ཟེརས་པ། ལྷོ་ཀྲབ་རྒྱལ་པོས་བདེན་ཇོ་ཇོ་ཟེར་དེ་རང་གི་དམག་བཅིངས་མཁན་ཚང་མ་ཕྱུད་ནས། ཚང་མ་རང་ཡུལ་ལ་སོང་བས། མདའ་དཔོན་གྱི་བུ་ཚ་ཡང་ཕྱིར་ལོག་སྟེ་ཡོང་སྟེ། གླིང་པ་ཀུན་ལ་ཟེརས། ང་དང་འདིར་འདུག་སྟེ་ཕན་བ་ཅིའང་མི་འདུག། གླིང་ཡུལ་ནས་དམག་འཁྱོང་བ་སོང་ཤིག་ཟེརས་པ། ཨ་གུ་དཔལ་ལེ་དང་རྒྱལ་བུ་གླིང་ཡུལ་ལ་ལོག་སྟེ་བཏངས། ཁོང་རང་ཚང་ཀ་ཉིད་ནས་ཁྲུད་ལ་འདུགས་པས། དཔལ་ལེ་དང་རྒྱལ་བུ་གླིང་ཡུལ་ལ་བསྐྱེབ་སྟེ་མི་ཚང་མ་བསྡུ་སྟེ་གྲབས་བཅོས་པ། དཔལ་མོ་འི་ཨ་སྟག་དཔལ་ཡུལ་ལ་སོང་སྟེ་མེད་པས། ཁྲོ་ལ་པོས་པ་སྲུ་ཆེན་ཟེརས་པ། ཨ་གུ་དཔལ་ལེས་ང་ཆེན་ཟེར་དེ། དཔལ་ལེ་དཔལ་ཡུལ་ལ་སོང་བས། དཔལ་མོ་འི་ཨ་སྟག་དང་ཁྲ་མིག་ཡང་ཤན་ཟེར་མཁན་ཞིག་དང་གཉིས་ཀོ། རི་ཞིག་ཁའབྲོང་ཆེན་ཞིག་མདུལ་བ་སོང་སྟེ་མེད་ཚུག།

དཔལ་ལེ་རྒོད་པོ་རི་མཐོན་པོ་ཞིག་ལ་སོང་སྟེ་བལྟས་པ། ཁོང་གཉིས་ཀས་འབྲོང་ཆེན་དེ་ལ་དེད་ཀྱིན་ཡོད་ཚུག། དཔལ་ལེ་རྒོད་པོས་གཏམ་ལན་གླུ་ཞིག་བཏངས་སོ།

ཨ་མ་བའི་བུ་མོས་དངོས་ལ་ཉོན་ལོ།
དཔལ་མོ་འི་ཨ་སྟག་བདག་ལ་གསན་ལོ།
གླིང་མཁར་སྟོད་ལ་ལྡུང་པའི་དམག་བསྐྱིབ་ལོ།
གླིང་མཁར་རྩེ་དགུ་ལ་དགུ་རིམ་རིག་འཁོར་དེ་ཡོད།
རྒྱལ་པོ་ཀེ་སར་ཟླུམ་སྟེ་ཁྲིརས་ལོ།
རྒྱལ་བུ་ཤེལ་དཀར་ལ་ཆོན་ཆ་རིག་ཕོག་ལོ།
ཨ་མའི་བུ་མོ་འབབ་སྟེ་རིག་སྐྱོད་ལོ།
དཔལ་མོ་འི་ཨ་སྟག་ཡོང་དགོས་རིག་འདུག་ལོ།

དེ་ཟླུག་ཟེར་པ་སང། དཔལ་མོ་འི་ཨ་སྟག་གིས་གླུ་ཞིག་འདི་ལྟར།

ལྷ་གླིང་པའི་དཔའ་བོ་དངོས་ལ་ཉོན་ལོ།
ལྷ་དཔལ་ལེ་རྒོད་པོ་བདག་ལ་གསན།
འདི་རིང་ངའི་ཁ་བར་ཚོར་ར།
ང་ནི་དཔལ་ཡུལ་ལ་འདུག་སྟེ་ལོ་མང་པོ་སོང་ལོ།
གླིང་ཡུལ་ལ་དམག་བསྐྱིབ་པ་ངའི་ཡིད་དུ་ཡོངས་ས།
ཁེ་ཀ་སར་རྒྱལ་བོ་དམག་གིས་འཁྲེར་ནང་གྲིག།
ཨ་མའི་བུ་ཆུང་གི་རྩད་གཅོད་ལ་ཡོང་ཡིན།
རྒྱལ་བུ་ཤེལ་དཀར་གྱི་རྩ་ར་ལ་ཡོང་ཡིན།

དེ་ཟླུག་ཟེར་པ། ཨ་གུ་དཔལ་ལེ་ལ་སྐྱོ་ཡོང་སྤེ་ཡང་གླུ་ཞིག་བདངས་སོ།

ལྷ་དཔལ་མོ་འི་ཨ་སྨུག་དངོས་ལ་ཉེན་ལོ།
ཁྲིད་ཡོང་ཡིན་ཟེར་ན་བདེ་མོ་ལ་ཡོང་ལོ།
ཁྲིད་མི་ཡོང་ཟེར་ན་ང་ལ་གྲི་ཞིག་ཡོད་ལོ།
ང་ལ་སྐྱོ་ཞིག་ཡོང་ཙ་ན་གྲི་མགོ་གང་རིག་བིང་འདུག།
ངའི་རྩ་ཆེན་དེ་འགུལ་ན་གཡག་ཆེན་འཕར་ར་མཆོགས་ཡོད་ལོ།
ངའི་སོ་ཀུན་རྡུང་ཙ་ན་གྲོ་ཡོས་རྗེ་བ་དང་འདྲ་ལོ།

དེ་ཟླུག་ཟེརས་པ། ཁྲ་མིག་ཡང་ཤན་ཡོང་སྤེ། དཔལ་ལེའི་རྐང་པ་ལ་འཐམས་ནས་འཇུ་ཟེར་དེ། ཞག་བདུན་ན་ཡོང་ཅེས་ཀྱི་ཁ་ཆད་བཅོ་སྤེ་ན། དཔལ་ལེ་ཕྱིར་ལོག་སྤེ་གླིང་ཡུལ་ལ་ཡོངས། དེ་ནས་ཞག་བདུན་སོང་སྤེ་ཁོང་ཨ་ཇེ་ནོ་མོ་གཉིས་ཀ། རི་ནས་ཟབ་སྤེ་ཡོངས། ཁོང་གཉིས་ཀ་ལ་འབྲོང་ཤ་སྨུ་རེ་མེད་པ། ཟ་ཅེས་ཟ་མེད་ཚུག་པས། ཁྲ་མིག་ཡང་ཤན་གྱིས་ཟེརས་པ། ཨ་ཇེ་ལེ། ང་དང་གཉིས་ཀ་ལྷུང་ཡུལ་ལ་སོང་སྤེ་ནམ་སླེབ་ཡིན། དེ་ཚུག་པ་ང་དང་ལ་འབྲོང་ཤ་ཉུ་དྲུན་ཆེན་ཟེར་པ་སང། ཨ་ཟེས་ཇེ་རས། ཨ་རིའི་ཁ་ལ་འབྲོང་ཨ་མ་ཕྲུ་གུ་གཉིས་འདུག། དེ་གཉིས་ཀ་བསད་དེ་འཁྱེར་ཡིན་ཟེར་དེ། ཁོང་གཉིས་ཀ་དེ་རིའི་རྩ་ཙུ་དགོངས་ལ་འདུགས། འབྲོང་ཨ་མ་ཕྲུ་གུ་གཉིས་ཀ་ལ། ཁོང་གིས་བསད་ཅེས་ཤེས་དེ་ཨ་མས་ཟེརས་པ། ལྷ་བུ་མོ། ང་དང་གཉིས་ཀ་ཁོང་གིས་བསད་ཅེས་ཡིན་ནོག། ང་དང་གཅིག་པོ་སྔོན་ལ་བསད་ན། གཅིག་པོ་ལ་ཚོར་ཀ་ཡོང་ཡིན། དེ་བས་གཉིས་ཀ་མཉམ་པོ་སོད་ཟེར་ཅེས་ལ་དེ་ཙུ་འབབ་སྤེ་ཆེན

ཟེར་དེ། ཁོང་གཉིས་ཀ་རི་ནས་བབ་སྟེ། ཁོང་གི་གུར་རི་མདུན་ལ་སོང་ནས་དེ་རུ་གཉིད་ལོག་སྟེ་འདུགས་སོང་། སྤྲ་མོ་དཔལ་མོ་འི་ཨ་སྟག་སྟོན་ལ་ཕྱི་སྤུ་རུ་བྱིང་པ་སང་། འབྲོང་དེ་གཉིས་ཀ་གུར་གྱི་མདུན་ལ་གཉིད་ལོག་སྟེ་ཡོད་ཅེས་མཐོང་སྟེ། ཨ་ཇེས་ནོ་མོ་ལ་གླུ་ཞིག་འདི་ལྟར།

ཨ་ཇེའི་ནོ་མོས་དངོས་ལ་ཉོན་ལོ།
ཁྲ་མིག་ཡང་ཤན་བདག་ལ་གསན།
ང་དྲི་སྨྲས་སྐོ་ལ་འབྲོང་གཉིས་འདུག་ལོ།
ང་དྲི་མདུན་ལ་འབྲོང་མ་ཕྲུག་གཉིས་འདུག་ལོ།
ར་ལ་ཡིན་ན་ཅུང་ཅུང་ཞིག་འདུག་ལོ།
གཉེན་ལ་ཡིན་ན་མང་མང་ཞིག་འདུག་ལོ།

དེ་ལྟག་ཟེར་ས་པ། ཁྲ་མིག་ཡང་ཤན་སྐོ་ལ་བིང་སྟེ་འབྲོང་ཀུན་ལ་གླུ་ཞིག།

ལྷ་འབྲོང་གཉིས་ཀ་དངོས་ལ་ཉོན་ལོ།
འབྲོང་ཆེན་ཁྲིད་ཀྱིས་བདག་ལ་གསན་ལོ།
ཁྲིད་ར་ལ་ཡོངས་ས་གཉེན་ལ་ཡོངས་ལོ།
ཁྲིད་ར་ལ་ཡིན་ན་ཅུང་དུན་རིག་འདུག་ལོ།
ཁྲིད་གཉེན་ལ་ཡིན་ན་མང་བ་རིག་འདུག་ལོ།
ཁྲིད་ང་ཞ་ལ་རྫོང་བལྟ་མཁན་ཞིག་ཡིན་ན།

ཟེར་ས་པ། འབྲོང་གིས་ལན་དུ་གླུ་ཞིག་བཏངས་སོ།

ཨ་མའི་བུ་མོ་དངོས་ལ་ཉོན་དང་།
ཁྲ་མིག་ཡང་ཤན་བདག་ལ་གསན་ལོ།
ཉེ་ཞང་ཙའི་རིའི་མདུན་ལ་བཞུགས་པ་སང་།

ང་ཞ་བཤད་ཅེས་ཡིན་ནོག་བསམ་ལི།
ང་ཞ་གཅིག་པོ་བཤད་ན་གཅིག་པོ་ལ་མི་ངན་མཐོང་ཡིན་ལི།
ཕྱུད་ན་ང་ཞ་གཉིས་ཀ་ཕྱུད་ལི།
བཤད་ན་ང་ཞ་གཉིས་ཀ་སོད་ལོ།

དེ་ཞུག་ཟེརས་པ་སང། དཔལ་མོ་འི་ཨ་སྟག་ལ་སློང་ཧྲེ་ཚོར་ཏེ་ཡང་འགྲོང་ལ་གླུ་ཞིག་བདངས་སོ།

འགྲོང་མ་བུ་གཉིས་ཀྱིས་དངོས་ལ་ཉོན།
ཤར་ལ་ལྷ་སྟེ་རི་དཀར་པོ་ཞིག་ཡོད་ལོ།
དེ་ནི་དབང་པོ་རྒྱབ་ཞིན་གྱི་སྒྲུང་རི་ཡིན།
དེ་ཙུ་ཁྲེ་ཞམ་ཆ་ལོ།
ལྷོ་ལ་ལྷ་སྟེ་རི་དམར་པོ་ཞིག་ཡོད།
དེ་ནི་ཨ་མ་སྐྱབ་མདུན་མའི་སྒྲུང་རི་ཡིན།
དེ་ཙུ་ཁྲེ་ཞམ་ཆ་ལོ།
ནུབ་ལ་ལྷ་སྟེ་རི་ནག་པོ་ཞིག་ཡོད་ལོ།
དེ་ནི་གླུ་རྒྱལ་ཕྱོག་པོ་འི་སྒྲུང་རི་ཡིན།
དེ་ཙུ་ཁྲེ་ཞམ་ཆ་ལོ།
བྱང་ལ་ལྷ་སྟེ་རི་སྔོན་པོ་ཞིག་ཡོད་ལོ།
དེ་ནི་ཀ་ཤར་རྒྱར་པོ་འི་སྒྲུང་རི་ཡིན།
དེ་ཙུ་ཁྲེ་ཞམ་ཆ་ལོ།
ནུབ་བྱང་གཉིས་ཀྱི་བར་ལ་སོལ་རི་ཟམ་པའི་རི་ཡོད།
དེ་ནི་ང་རང་གི་སྒྲུང་རི་ཡིན།

དེ་རུ་ཁྲི་ཞ་ཆེ་ཐར་ལ་བདང་ཡིན།
དེ་རུ་ཁྲི་ཞ་ཆ་དགོས་སྲུག།

དེ་ཟུག་ཟེརས་པ། འབྲོང་གཉིས་ཀས་དཔལ་མོ་འི་ཨ་སྟག་གི་ཀང་པ་ལ་འཐམ་སྤེ་འཇུ་ཟེར་དེ། ཁོང་དེ་རི་ལ་སོང་བས། དེ་ཚུག་པ་ཡང་བོས་མཁའ་གླིང་ཡུལ་ནས་ཤེལ་གྱི་བུ་ཆུང་ཡོང་སྤེ་གླུ་ཞིག་བདངས་སོ།

བུ་ཚའི་ཨ་མས་དངོས་ལ་ཉན་ལོ།
ཨ་མ་དཔལ་མོས་བདག་ལ་གསན་ལོ།
ཤེལ་ལྷང་ལྷ་མོས་ང་དང་ལ་གདམ་ངན་ཞིག་བདངས་ལོ།
ང་དང་ལ་མགར་བརྒྱུད་ཅིག་ཟེརས་ལོ།
ཁོ་ནང་ང་མི་མཐུན་ཅས་སོང་ལོ།
ལྷང་ཡུལ་ལ་བུ་ནོ་ཞིག་འདུག་ལོ།
དེ་བོ་ང་ལ་བགམ་ལ་འཁྱོང་ཡིན།
ཨ་མ་དཔལ་མོ་རོགས་ལ་སྐྱོད་ལོ།

དེ་ཟུག་ཟེརས་པ། དཔལ་མོས་ལན་དུ་གླུ་ཞིག།

འདི་རིང་ཨ་མའི་ཡིད་དུ་ཡོངས་ས།
འདི་རིང་དཔལ་མོ་འི་ཡིད་དུ་ཡོངས་ས།
ང་དཔལ་ཡུལ་ལ་འདུག་སྤེ་ལོ་ནི་མང་པོ་སོང་།
ཁྱེད་ལ་ཤེལ་ལྷང་ལྷ་མོ་མ་དགོས་ས།
དེ་སང་རྒྱལ་བ་གཉམ་འཁྱོང་ཡིན།

དེ་ཟུག་ཟེར་དེ་སྒྲོ་བཅོས་པ། རྒྱལ་བུས་དཔལ་མོ་འི་ཀང་པ་ལ་འཐམ་སྤེ། འཇུ་མང་པོ་ཟེརས་པ། དེ་ནས་ཁོང་མཐུན་དེ་ཚེ་ཀ་གླིང་

མཁར་ལ་ཡོངས། གླིང་ཡུལ་ནས་དམག་བསྡུས་བཅོས་ནས། ལྡོང་ཡུལ་ཕྱོགས་ལ་ཁྲིརས། དེ་ནས་ལྡོང་ཡུལ་ལ་བསྒྲིབ་སྟེ། ཡུལ་གྱི་སྟོད་ལ་སྤང་ཐང་ཆེན་མོ་ཞིག་ཡོད་ཚུག། དེ་རུ་རང་རང་གིས་གུར་བདང་སྟེ་འདུགས་སོ། མདའ་དཔོན་གྱི་བུ་ཚ་ཟ་གཡུ་ཟ་རྩལ་གྱིས་རང་གི་རྟ་ལ་ཀུ་ཡིག་བཙུག་སྟེ། ཨ་ནེ་བཀུར་དམན་རྒྱལ་མོ་ལ་མེན་ནས་མ་བེ་ཤིག། ཡང་ནང་རང་ལ་མེན་བ་མ་བེ་ཤིག་ཟེར་དེ་ན། དེ་རྟ་ཁྲོ་ལ་ཕྱུད་དེ་ན། ཁོ་རང་བན་ཆུང་བཙོ་སྟེ་སྐྱེ་ལ་ཕྲེང་བ་ཁུར་དེ། ལག་པ་ལ་མ་ཎི་ཁུར་དེ་སྤྲོང་ཕོ་བཙོ་སྟེ། ལྡོང་ཡུལ་ལ་ལྷ་སྐོར་ལ་སོང་པས། ལྡོང་ཡུལ་གྱི་མཚུག་ལ་ཁང་བུ་ཞིག་གི་ནང་དུ་ཇོ་ཇོ་ཞིག་གིས་སྐྲ་གྲོལ་དེ། སྐྱེ་རགས་གྲོལ་དེ་སྤུག་སྤྱུང་སྟེ་ཡོད་ཚུག། དེ་བུ་མོ་ལ་སྤྲོང་ཕོས་འདྲིས་པ། ཡུ་ཨ་ཇེ། འདི་ཁང་བུའི་ནང་ལ་ཅི་བཙོ་རྡུག། ཨ་ཇེ་རང་སྤུག་གི་ནང་དུ་ཅི་ལ་འདུག་འདུག་ཟེརས་པ། བུ་མོས་ཟེརས་པ། ནོ་ལེ་སྔོན་ལ་ང་གྲོ་ཡུལ་དུ་སྒྲོན་ཕོ་མིག་དམར་ལ་བག་མ་ལ་སོང་བ་ཡིན། ཁོ་དང་ང་ལ་ཕྲུ་གུ་གཉིས་སྐྱེས། སྒྲོན་པོ་མིག་དམར་དེ་རྒྱལ་བུ་ཤེལ་དཀར་གྱིས་བསད་སོང་། དེ་ནས་ང་མི་དབང་རལ་ཆུང་ལ་བག་མ་ལ་ཡོངས་པས། ཁོ་ཡང་གླིང་པའི་མདའ་དཔོན་གྱི་ཕྲུ་གུས་བསད་སོང་། དེའི་ཕི་ལ་ང་ལ་སྤུག་སྤྱུང་སྟེ་ཡོད་ལེ་ཟེརས། སྤྲོང་ཕྲུག་གིས། ཨ་ཇེ་རང་ལ་གྲོའི་བང་བ་གང་། ནས་བང་བ་གང་ངས་བདང་ཡིན། གླིང་ཡུལ་དང་ལྡོང་ཡུལ་ག་ཟུག་ལ་འཁྲུགས་ཡིན་ཟེརས་པ། བུ་མོས་ཟེརས་པ། གྲོ་དང་ནས་ངའི་སུས་ཟེན། ཉིད་རང་གླིང་པའི་མི་ཞིག་ཡིན་ཚོད་འདུག། ཉིད་སྤྲ་ཕོག་བསད་པའི་ཤན་པ་ཡིན། ཕྱི་རྡོ་འདྲེན་པའི་སློབ་ཡིན། ངགར་སྐྱུལ་ནའང་སྐྱུལ་བ་མཛོད་ཞེས་པ། གླིང་

ཡུལ་དང་ལྗང་ཡུལ་དེ་འཁྲུགས་པའི་དོན་དེ་ནི། ཡཁར་ནས་འོད་འཁྲུར་དེ་རྒྱུ་ཐུམ་མ་རྒྱུ་འཁྲོང་བ་ཡོང་ཆེན། དེ་བོ་བསད་བདང་ན་ལྗང་ཡུལ་དང་གླིང་ཡུལ་འཁྲུགས་ཡིན་ཟེརས་པ། ཡང་སྐྲོང་ཕྲུག་གིས། ཨ་ཇེ་རང་ཨ་གུ་གང་པོ་དང་མཉམ་པོ་སྙིང་ཉེ་མོ་རག་ཟེརས་པ། བུ་སོས་ང་བློན་པོ་མིག་དམར་དང་སྙིང་ཉེ་མོ་རིག་རག་ཟེརས་པ། དེ་ནས་སྐྲོང་ཕྲུག་གིས། སྨོན་ལམ་ཞིག་བདབ་སྟེ། བུ་མོ་འདི་བློན་པོ་མིག་དམར་དང་ཐུག་སྟེ། ཕྲུ་གུ་ཀུན་དང་འཛོམ་སྟེ། ཐང་ཆེན་མོ་ཞིག་གི་ཁ་མཁར་ཞིག་ལྷན་དེ། ཁྲལ་བབ་མེད་པར་ལུས་ཤིག་ཟེར་དེ། རྟ་མཆོག་ལ་འཐམ་སྟེ་ཕངས་བདངས་པ་སང། བུ་མོ་དང་བློན་པོ་མིག་དམར་ཕྲུ་གུ་གཉིས་ཀ་དང་འཛོམ སྟེ། ཐང་དེའི་ཁ་མཁར་བདེ་མོ་ཞིག་ལྷན་དེ། དེ་ཏུ་གནས་སོ། སྐྲོང་ཕྲུག་དེ་མཁར་གྱི་རྩ་ཏུ་རྒྱུ་མིག་ཅིག་གི་མདུན་ལ་ཤིང་གོ་ཟོམ་ཞིག་ཡོད་ཚུག། དེའི་ནང་དུ་བཞུག་སྟེ་འདུགས་པ། མཚན་ཕྱེད་ཟམ་ལ་རྒྱུ་ཐུམ་མས་ནོར་བུའི་འོད་འཁྲུར་དེ་རྒྱུའི་མདུན་ལ་བསྐྱིབ་པ། སྐྲོང་ཕྲུག་བིང་སྟེ་རྒྱུ་མ་སྐྱིབ་ཅིག་ལ་བསད་སོང། ནམ་ལངས་དེ་ན། རྒྱུ་ཐུམ་ས་མ་བསྐྱིབ་ཟེར་དེ་མཁར་ནས་མི་ཁ་ཅིག་ལྟ་ལ་ཡོངས་པ། རྒྱུ་མ་དེ་བསད་དེ་མགོ་དེར། ཀང་པ་དེར། ལག་པ་དེར་ཕང་སྟེ་ཡོད་ཚུག། དེ་ལྟ་མཁན་ཀུན་ལ། ལྟུང་མའི་གོ་ཟོམ་གྱི་ནང་ན། སྐྲོང་ཕྲུག་དེ་མཐོང་སྟེ་འདྲིས་པ། ཕྲ་སྐྲོང་ཕྲུག། ངའི་རྒྱུ་མ་མ་སམཐོང་ང་ཟེརས་པ། སྐྲོང་ཕྲུག་གིས་གླུ་ཞིག་བདངས་སོ།

ཉེ་ཞའི་རྒྱུ་མ་ངས་མི་ཤེས་ངས་མི་ཤེས།
ཉེ་ཞའི་རྒྱུ་ཐུམ་མ་ངས་མི་ཤེས་ངས་མི་ཤེས།
ད་ཕྱི་མཚན་ནི་མཚན་ཕྱེད་ལ་མཚན་ཕྱེད་ལ།

སྐད་སྣ་མང་པོ་ཕྱིང་ང་རག་ཕིང་ང་རག།
སྨུ་ཡིན་སྨུ་ཡིན་ཟེརས་པ་ལོ་ཟེརས་པ་ལོ།
ང་ཡིན་ང་ཡིན་ཟེར་རག་ལོ་ཟེར་རག་ལོ།
ག་ནས་ཡིན་ག་ནས་ཡིན་ཟེརས་པ་ལོ་ཟེརས་པ་ལོ།
འདི་ནས་ཡིན་འདི་ནས་ཡིན་ཟེར་རག་ལོ་ཟེར་རག་ལོ།
གར་ཆ་ཆེན་གར་ཆ་ཆེན་ཟེརས་པ་ནི་ཟེརས་པ་ནི།
དེར་ཆ་ཆེན་དེར་ཆ་ཆེན་ཟེར་རག་ལོ་ཟེར་རག་ལོ།
བྲུ་ཚོང་རང་འཇིག་འཇིག་རིག་སོང་འཇིག་འཇིག་རིག་སོང་།
སྤྲོང་པོ་ང་རང་འཇིག་འཇིག་རིག་སོང་འཇིག་འཇིག་རིག་སོང་།

དེ་ཟུག་ཟེརས་པ། མི་ཚང་ཀ་ལོག་སྡེ་སོང་ནས། ཁོས། ཨ་ཇོ་པ་འདིར་སློས་འང་ཟེར་དེ། རྒྱུ་མས་ཁྲུར་མཁན་གྱི་ནོར་བྲུ་སྣུནས་པ། དེ་མི་ཚང་ཀ་ལོག་སྡེ་ཡོང་སྡེ། ང་ཞའི་རྒྱུ་མ་བཤད་མཁན་པོ་ཁྲུ་རང་ཡིན་ནོག་ཟེར་དེ། ཁོ་མཁར་ལ་ཟུམ་སྡེ་ཁྲིརས། རྒྱལ་པོས་ཁོ་བཙོན་ཁང་ལ་བདངས། ཁོ་ལ་ཟླ་ཅེས་ཞག་དང་ཕྲུ་གུ་ཞིག་གིས་འཁྲིང་ངེད་ཚུག། ཞག་ཅིག་ཉ་ཟུམ་མཁན་གྱི་མི་གསུམ་ལ་གསེར་ཉ། དུང་ཉ། གཡུ་ཉ་གསུམ་ཉན་སོང་། ཁོང་སྨུས། བ་ཟུར་ལ་ཆོང་པ་ལ་འཁྲིར་ཡིན་ཟེརས། སྨུས། རྒྱལ་པོ་ལ་ཕྲུལ་ཡིན། རྒྱལ་པོས་ང་དང་ལ་རིན་རྒྱལ་ལ་བདང་ཡིན་ཟེར་དེ། དབུག་ཅིག་གི་ཁ་ཁྲུར་དེ་མཁར་ལ་ཁྲིརས། རྒྱལ་པོ་འི་མདུན་ལ་བསྐྱིབ་པ་སང་། ཉ་དེ་ཚང་ཀ་སྐོད་སོང་། དེ་ནས་རྒྱལ་མོས་རྒྱལ་པོ་ལ། འདི་ཉ་བ་སྐོད་པའི་རྩ་བ་ཤོད་ཟེར་དེ་སྐར་ཇག་བདངས་སོ། རྒྱལ་པོ་ལ་ཉ་བ་སྐོད་པའི་རྩ་བ་མ་ཤེས་པ། དེ་ཙ་མི་ཚང་མ་བསྡུ་སྡེ། གྲབས-

བཅོས་པ་སང༌། དེའི་ཞག་ལ་སྤྲང་ཕྲུག་ལ་བཙོན་ཟན་ཁྱེར་མཁན་ཀྱི་ཕྲུ་གུ་དེ་རྟུ་ལྟེན་འདུགས་པ། ཁོ་ལ་བཙོན་ཟན་འགོར་སོང༌། ཕྲུ་གུས་མགྲོགས་པ་ཁྲར་དེ་སོང་བ། སྤྲང་ཕྲུག་ལ་སྤྲོ་ཡོང་སྤྱེ་ཟེརས། ང་བཙོན་ལ་བོར་ཅས་ཤེས། བཙོན་ཟན་ཅི་ལ་མ་ཁྱོངས་ཟེརས་པ། ཕྲུ་གུས་འདི་རིང་ཆ་ཞིག་འགོར་སོང༌། ཅིའི་ཕྱི་ལ་འགོར་ཟེར་ན། ཉ་ཟུམ་མཁན་ནི་མི་གསུམ་ལ། གསེར་ཉ། དུང་ཉ། གཡུ་ཉ་གསུམ་ཐོབ་སྟེ་རྒྱལ་པོ་ལ་ཕུལ་པ་ཁྱོངས་པ། ཉ་དེ་ཚང་ཀ་ཐོད་སོང༌། རྒྱལ་མོས་རྒྱལ་པོ་ལ་ཉ་བ་ཐོད་པའི་རྩ་བ་ཤོད་ཟེར་དེ་སྐར་ཐུག་བཏང་འདུག། ང་དེའི་ཕྱི་ལ་འགོར་སོང་ཟེརས་པ། སྤྲང་ཕྲུག་གིས་ཉ་བ་ཐོད་པའི་རྩ་བ་དེ་ང་ལ་ཤེས་ཡིན་ཟེརས་པ། དེ་ཕྲུ་གུ་རྒྱལ་པོ་འི་མདུན་ལ་སོང་སྟེ། ཉ་བ་ཐོད་པའི་རྩ་བ་དེ་བཙོན་ཁང་ལ་ཡོད་པའི་སྤྲང་ཕྲུག་ལ་ཤེས་ཡིན་ཟེར་འདུག་ཞུས། སྤྲང་ཕྲུག་དེ་བཙོན་ཁང་ནས་ཐོང་སྟེ་རྒྱལ་པོ་འི་མདུན་ལ་ཁྱེརས། རྒྱལ་པོས་སྤྲང་ཕྲུག་ལ་འདྲིས་པ། ཉ་བ་ཐོད་པའི་རྩ་བ་ཤེས་ཡིན་ན་ཤྲ་ཕྲུ་གུ། ཤེས་ན་ཁྱོ་རང་བཙོན་ཁང་ནས་ཐོང་ཡིན་ཟེརས་པ། ཕྲུ་གུས་ཤེས་ཡིན་ཟེར་དེ་རྒྱལ་པོ་ལ་སྨུག་གདམ་ཞིག་ཞུས་པས། ཉ་བ་ཐོད་པའི་རྩ་བ་དེ། ཉེ་རང་གི་ཇོ་ཇོ་ཀླུའི་རྒྱལ་པོ་ལ་བགམ་ལ་འཁྱེར་ཅས་ཡིན་ནོག། ཉ་ཚང་ཀ་ཀླུའི་རྒྱལ་པོས་ཧྲགས་ལ་བཀལ་མཁན་ཡིན། དེའི་ཕྱིར་ཉ་ཐོད་པ་ཡིན་ཟེརས་པ། རྒྱལ་པོ་བདེན་ཆེས་དེ། ཇོ་ཇོ་ལ་སྤྲོ་དྲག་པོ་བཅོ་སྤྱེ་ཟེརས་པ། ཁྱོ་རང་ཇོ་ཇོ་ཞག་བདུན་གཡངས་པ་ལ་ཆ་དགོས། ཞག་བདུན་སོང་སྟེ་ན། ཁྱོ་རང་གསད་ཅས་ཡིན་ཟེར་དེ། ཇོ་ཇོ་ཡུལ་ཚང་ན་ལ་གཡངས་པ་ལ་བཏངས་སོང༌། དེ་ནས་རྒྱལ་པོ་འི་མདུན་ལ་མི་མཁས་པ་ཞིག་ཡོད་པས། དེ་མིས་རྒྱལ་པོ་ལ་ཞུས་པ། རྒྱལ

གྲོ་ལེ། ཛོ་ཛོའི་སྐྱོན་ཅང་མི་འདུག་ལེ། དེ་ཕྲུ་གུའི་སྐྱོན་འདུག། ཁོས་ཛུན་བཏང་སྟེ་ཡིན་ནོག་འདི་ཕྲུ་གུ་བསད་དེ་མིན་བ། ཡུལ་ལ་ཞི་བདེ་མི་ལུས་ཞུས་པ། རྒྱལ་པོ་བདེན་ཆེས་དེ། ཛོ་ཛོ་ཡང་ལོག་སྟེ་ཁྲིངས་ནས། སྲོང་ཕྲུག་བསད་ཅེས་ལ་ཁ་འཆམས་སོང་། ཁོ་ག་ཟླུག་ལ་བསད་ཡིན་ཟེརས་པ། སུས་ལྷགས་པ་ཤུ་སྟེ་བསད་ཡིན་ཟེརས། སུས་ཀང་ལག་བཅད་དེ་བསད་ཡིན་ཟེརས་པ། ཁོང་ཚང་མ་ལ་ཁ་མ་འཆམས་དེ། དེ་ནས་ཁོ་རང་སྲོང་ཕྲུག་གིས་ཟེརས་པ། ཁྲེ་ཞ་ལ་བསད་ཅེས་སི་ཕེ་ལ་ཁ་མ་འཆམས་ན། ང་ཞའི་གླིང་ཡུལ་གྱི་ཁྲིམས་ལ་སོད་ཅིག་ཟེརས་པ། ཕྱོགས་གཞི་ལ་ལྷུགས་ཐག་དོག། ལྷུགས་ཐག་གི་སྣེ་མོ་ངའི་ཀང་པ་ལག་པ་ལ་དོག། དེ་ནས་མཁར་གྱི་ཁ་ཐོག་ལ་ཁྱེར་དེ། མཁར་གྱི་རྩ་ལ་ཆེར་མང་མང་པོ་སྤྲུང་ཤིག། མར་མང་པོ་དོང་། མི་ཚང་མ་ལྟད་མོ་ལ་ཁྲོང་ཤིག། ངས་སྨོན་ལམ་བདབ་སྟེ་ད་འཐེན་ཟེར་ཡིན། དེ་ནས་ཆེར་མང་ཚང་མ་ལ་མེ་དག། དེ་ནས་ང་མེའི་ནང་དུ་འཐེན་ཅིག། དེ་ཟླུག་ཟེརས་པ། རྒྱལ་པོ་དང་མི་ཚང་མས་དེ་ཟླུག་རྒྱལ་ཟེར་དེ། ཁོ་མཁར་གྱི་ཁ་ཐོག་ལ་ཁྱེར་དེ། ཕྱོགས་བཞི་ལ་ལྷུགས་ཐག་བདག་སྟེ་བོརས། མཁར་གྱི་རྩ་རུ་ཆེར་མང་མང་པོ་སྤྲུངས། མར་མང་པོ་བཏངས། མི་ཚང་མ་ལ་བོས་དེ་ཟེརས་པ། འདི་རིང་གླིང་པའི་མི་ཞིག་གསོན་བསྲེག་ལ་བཏང་འདུག། མི་ཚང་མ་ལྟད་མོ་ལ་ཡོང་ཤིག་ཟེརས་པ། རྒད་པོ། རྒད་མོ། ཕྲུ་གུ་ཚང་མ་ལྟད་མོ་ལ་འདུས་པས། གླིང་པའི་དམག་ནང་ནས་མདའ་དཔོན་གྱི་བུ་ཚ་སོང་སྟེ་ཞག་ཁ་ཅིག་སོང་། ལྷ་མཁན་ཆ་ན་རྒྱལ་ཟེར་དེ་གོང་མ་བུ་ཚ་སོང་ཟེརས་པ། ཁོ་ཕོ་རོན་ཞིག་ལ་ཛ་སྟེ་སོང་བ། མདའ་དཔོན་གྱི་བུ་ཚ་

ལྕགས་ཐག་བཞི་ལ་བདག་སྟེ་ཡོད་ཅེས་མཐོང་སྟེ། ཁོ་མཁར་གྱི་ཟུར་ལ་ཡོང་སྟེ། མདའ་དཔོན་གྱི་བུ་ཚ་ལ་གླུ་ཞིག་བདངས་སོ།

ཨ་ཙོ་བའི་ནོ་ནོ་དངོས་ལ་ཉོན་ལོ།
མདའ་དཔོན་གྱི་བུ་ཚས་བདག་ལ་གསན་ལོ།
ནོ་ནོ་ཉེ་རང་མ་འཇིགས་ལོ།
བུ་ཚ་ང་རང་རོགས་ལ་ཡོད་ལོ།

དེ་ཟུག་ཟེརས་པ། མདའ་དཔོན་གྱི་བུ་ཚས་ལན་དུ་གླུ་ཞིག་བདངས་སོ།

ཨ་ཙོ་ཉེ་རང་ལ་ཚོར་ཀ་མི་དགོས་ལོ།
གོང་མ་བུ་ཚ་ལ་འཇིགས་རི་མི་དགོས་ལོ།
བུ་ཚ་ང་རང་ལ་རོགས་དེ་མི་དགོས་ལོ།
ཉེ་རང་ལོག་སྟེ་སྐྱོད་པ་དགོས་སུག།
ཨ་ནེ་བཀུར་དམན་མོ་ལ་ཞུས་ལོ།
ངའི་ཏའི་ཀུ་ལིག་ཕེ་སྟེ་དོང་ཞུས།
ཏ་དེ་འདིར་མགྱོགས་པ་སླེབ་བཅུག་ཞུས།
ཉེ་རང་ནམ་མཁའ་ལ་སོང་སྟེ་ལྡོས་ལོ།

དེ་ཟུག་ཚོར་དེ། གོང་མ་བུ་ཚ་ལོག་སྟེ་སོང་ནས། ཨ་ནེ་བཀུར་དམན་རྒྱལ་མོ་ལ་ཞུས་པ། མདའ་དཔོན་བུ་ཚའི་ཏའི་ཀུ་ལིག་ཕྱེ་སྟེ་དོང་ལོ་ཟེརས་པ། ཨ་ནེ་བཀུར་དམན་མོས་ཀུ་ལིག་ཕྱེ་སྟེ། མི་ལ་མཐོང་མ་བཅུག་པར་ཏ་མཁར་གྱི་ཁ་ཐོག་ལ་བསླེབ་བཅུགས་སོང་། དེ་ནས་མདའ་དཔོན་བུ་ཚས་གླུ་ཞིག་བདངས་སོ།

ཨ་ཛེ་བའི་ཐྲ་རྫུས་དངོས་ལ་ཉོན་ལོ།
ཀྱང་ཁྲིའི་མེ་ལོང་བདག་ལ་གསན་ལོ།
ཐྲུ་རྫུ་ལོ་གསུམ་གངས་ཀྱི་མཐིལ་ལ་བོར་ཕིན།
གངས་ཀྱི་གངས་ངར་འཐྲོན་མཁར་ཞིག་ཡིན་ལོ།
ལོ་གསུམ་ཆུའི་མཐིལ་ལ་བོར་མཁན་ཞིག་ཡིན་ལོ།
ཆུའི་ཆུ་ངར་འཐྲོན་དེ་ཡོད་ལོ།
ལོ་གསུམ་སའི་མཐིལ་ལ་བོར་པ་ཡིན།
སའི་ས་ངར་འཐྲོན་དེ་ཡོད།
ལོ་གསུམ་སྟེང་ལྷ་ཡུལ་ལ་བོར་པ་ཡིན།
ལྷ་དམག་འཛོམ་མོའི་ལྷ་འབྲིས་ཤིག་ཡོད་ལོ།
ལོ་གསུམ་བར་བཙན་ཡུལ་ལ་བོར་པ་ཡིན།
བཙན་དམག་འཛོམ་མོའི་བཙན་འབྲིས་ཤིག་ཡོད་ལོ།
ལོ་གསུམ་འོག་གི་ཀླུ་ཡུལ་ལ་བོར་པ་ཡིན།
ཀླུ་དམག་འཛོམ་མོའི་ཀླུ་འབྲིས་ཤིག་ཡོད་ལོ།
གྲེན་གྲེན་གྲེན་ལ་སེང་གེ་ཀྱུང་མཆོངས་དེང་ལོ།
ཐུར་ཐུར་ཐུར་ལ་ལྷ་མོ་འབྲོུལ་གྲོས་རིག་དེང་ལོ།
ཕྲེད་ཕྲེད་ཕྲེད་ལ་ཕོ་རོག་ཟུར་མཆོངས་དེང་ལོ།
མང་ད་རི་ལ་སྨ་ལོ་མང་ལོ།
ཇ་ལོ་ཟེར་ན་ཟོར་ཆུང་གཅིག་གིས་ཚོག་ཡིན།
མང་ད་ལྷུང་པའི་དམག་ཀུན་མང་ལོ།
བསད་ལོ་ཟེར་ན་བྱ་ཚ་ང་རང་གིས་ཚོག་ལོ།

དེ་ནུབ་ཟེར་དེན། ཧ་ལ་ཞོན་དེ་གྲེན་མཚོངས་ཐུར་མཚོངས་ཤིག་བཏང་སྟེ་ན། ལྡང་པའི་མི་ནག་ཞོན་ཚང་མའི་ནང་ན། ཕྲེད་ཟམ་མེའི་ནང་དུ་ཕངས་སོ། ཕྲེད་ཟམ་ལ་རལ་གྲི་རྒྱབ་སྟེ་བསད་སོང༌། མི་གསུམ་ནུམ་སྟེ། གཅིག་གི་སྣ་བཅད་དེ། གཅིག་གི་རྣ་མཆོག་བཅདས། གཅིག་གི་ལྕེ་བཅད་དེ་ཚང་ཀ་མཁར་གྱི་ཁ་ཐོག་ལ་ཕངས་བཏངས་སོ། དེ་ནས་ཁོ་རང་གླིང་པའི་དམག་ཁྲང་དུ་ཡོང་སྟེ་ཟེརས་པ། ལྷ་གླིང་པ་ཀུན་འདིར་གུར་བཏང་སྟེ་འདུག་སྟེ། ང་དང་ལ་ཛེ་ ཛེ་མི་ཐོབ། དམག་བཏང་བ་ལ་འགྲུལ་ཤིག། གར་ཚང་མ་ཕབ་ཤིག་ཟེར་དེ། གར་འཐེན་དེ་སོང་ནས། ལྡང་པའི་མཁར་ལ་དགུ་རིམ་བསྐོར་བས། དེ་ནས་ཀློ་ཀླབ་ཡུལ་ནས་ཛེ་ ཛེ་ལྡང་ས་གཡུའི་ཚོ་རོན་མོ་ཡོང་སྟེ། ཡབ་རྒྱལ་པོ་ལ་སླབ་བྱ་བཏང་སྟེ་ཟེརས། འདི་དམག་ཚང་མ་གླིང་པ་ཡིན། ཁོང་ལ་ཅི་བཙོནའང་མི་ཉན། ད་ལྟ་ནོར་བུ་དོམ་ལྡུག་ཕྲུད་དོང༌། དེ་ནས་ཁོང་ལ་བཙོ་ཐབས་ཅིའང་མེད་ཟེར་དེ་ནཛེ་ ཛེ་ཀློ་ཀླབ་ཡུལ་ལ་ལོག་སྟེ་སོང༌། དེ་ནས་རྒྱལ་པོས་ནོར་བུ་དོམ་ལྡུག་ཕྲུད་བཏངས་པ། གླིང་པའི་དམག་ཚང་མ་མལ་མལ་ལ་ལངས་དེ་ཡོད་མཁན་དེ་ནུབ་ལ་ལུས་སོང༌། གོམ་པ་གང་སྤུ་ལ་ཡང་བཏང་ལོང་མ་ཡོངས་སོ། ཨ་གུ་ཁྲའི་མགོ་ཁྲའི་ཐུང་དེ་ཡང་ས་ཁྲུད་ཡན་ཟ་ཞིག་ལ་ཡོད་པ་ཡིན། དེའི་ཕི་ལ་ཁྲའི་ཐུང་ལུས་པས། ཁྲོས་ག་ཧུང་ས་ནས་ལྷུང་གིན་ཞིག། མ་ཐོབ་ན་ཀུ་ཡིན་ཞིག་ཁྲོང་སྟེ་གླིང་པའི་དམག་ཚང་མ་ལ་ཟ་ཅེས་ཉུ་ཅུན་རེ་བཏང་གིན་འདུགས། དེ་ནས་ཁྲའི་ཐུང་ལ། ཕོང་ཡོག་ཅིག་ན་ལྷ་ཅོ་ཞིག་བིང་སྟེ་ཚ་ཅེས་མཐོང་སྟེ། ཁྲའི་ཐུང་ཡང་དེང་རང་ནུབ་དེ་སོང་བ། ཁོང་པི་ཅོ་ཡུམ་ལ་བསྒྲིབ་སོང༌། ལྷ་ཅོ་སྒྲིབ་ཅིག་ལ་སྐོར་སོང༌། ཁྲུའི་ཐུང

དེ་བི་ལ་ཞིག་ལ་ཇུ་སྟེ་ཡིབ་སྟེ་འདུགས་པ། ཡི་ཙོ་ཁ་ཅིག་ཡོང་སྟེ། དེ་རུ་ཁྲིམ་ས་བསྡུ་སྡེ་སོང། ཡང་ཁ་ཅིག་ཡོང་སྡེ་དེ་རུ་བལ་རི་ཁྲོང་སྡེ་སྡོད་ལ་བཞིང་སྡེ་སོང་བས། དེ་ནས་དོང་སྲིན་ཡ་ཤ་རི་བ་བཀལ་དེ། སྤྲུར་པ་ལ་དྲ་མན་བཀལ་དེ། ཤ་རིབ་པུ་འིན་ཞིག། དྲ་མན་ཧུང་གིན་ཞིག། ཡི་ཙོས་ཉོ་པ་བཅོ་སྡེ་ཁྲོངས། དེ་ནས་ཁོས་བལྡ་སྡེ་འདུགས་པ། ཡི་དབང་རྒྱལ་ཆེན་དང། ཡི་དབང་སློན་ཆེན་གཉིས་ཀ་ཡི་ཙོ་ཚང་མས་པལ་ཀྱི་ལ་ཁྲུར་དེ་ཁྲོང་སྡེ་གྲལ་ལ་བོར་དེ། དེ་ནས་ཡི་ཙོ་ཚང་མ་རྩེ་འིན་ཞིག་གླུ་ཞིག་བཏངས་སོ།

ཡི་དབང་སློན་ཆེན་ནི་བག་སྟོན་རིགས།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཡི་དབང་རྒྱལ་པོ་འི་བག་སྟོན་ཡིན་ལོ།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ང་དང་ཚང་མ་ལ་སྐྱིད་པོ་ཡོད་ལོ།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཡི་ཙོ་ཚང་ཀ་བདེ་མོ་ཡོད་ལོ།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
སྐྱིང་པའི་དམག་རབས་ཆད་དེ་སོང།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
སྐྱིང་པའི་དཔའ་བོ་འི་དཔའ་རབས་ཆད།
ཡི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཤལ་ཁྲི་ཁྲའི་ཐང་ཡོད་ནའང་མི་འཛིགས།

ཐི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཞར་བ་ཁྲའི་ཐུང་ཡོད་ནའང་མེད་ནའང་ལོ།
ཕི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཕི་དབང་བློན་ཆེན་རྩེ་མགོ་ལ་ཞངས།
ཕི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།
ཕི་དབང་རྒྱལ་པོ་སྐྲ་རྩེས་ལ་སྐྱོད་ལོ།
ཕི་ཀྲུམ་མ་ཀྲུམ་ཀྲུམ་ཀྲུམ་ལོ།

དེ་ཟུག་ཟེར་ཅེས་ཁྲའི་ཐུང་ལ་ཆོར་དེ་སྒྲོ་ཡོང་སྟེ། དེ་ཕི་དབང་རྒྱལ་པོ་དང་ཕི་དབང་བློན་ཆེན་གཉིས་ཀ་ཟུམས་སོང་། དེ་ནས་ཕི་ཙོ་ཚང་མས་དམག་རྒྱབ་སྟེ། ཁྲའི་ཐུང་གི་ཤ་ཚང་མ་ཟོ་སྟེ་རྩུས་པ་ལ་ཐུག་བཙུས་པ། ཡིན་ནའང་། ཕི་དབང་རྒྱལ་པོ་དང་། ཕི་དབང་བློན་ཆེན་གཉིས་ཀ་ཁྲའི་ཐུང་གིས་མ་ཕུད་སོང་། དེང་ན་ཕི་ཙོ་ཚང་མས་ཁྲའི་ཐུང་ལ་ཧྲ་ཟེར་དེ། ང་ཞའི་རྒྱལ་པོ་དང་བློན་པོ་ཕུད་རེ་དེང་ཞུས་པ། ཁྲའི་ཐུང་གིས་ཟེརས། ངའི་ཤ་ཚང་མ་མལ་མལ་ལ་བཏང་ན་ཕུད་ཡིན་ཟེརས་པ། ཕི་ཙོ་ཚང་མས་ཁོ་འི་ཤ་ཚང་མ་སྐྱུགས་དེ་མལ་མལ་ལ་བཏང་སྟེ། སྨོན་མའི་མཆོགས་བཙོ་སོང་། ཡང་ཁྲའི་ཐུང་གིས་ཟེརས་པ། ཁྱེད་ཚང་མས་ནོར་བུ་དོམ་ལྟག་བཅད་དེ་གླིང་པའི་དམག་ཚང་མ་འབུད་བཙུག་ན། ཁྱེད་ཚང་མ་འཕུད་ཡིན། དེ་མིན་ན་ཁྱེད་ཚང་མ་ངསབསད་ཡིན་ཟེརས་པ། ཕི་ཙོ་ཚང་མ་འཛིག་སྟེ། ཕི་ཙོའི་དམག་བསྡུ་སྟེ། ནོར་བུ་དོམ་ལྟག་སྤྲིབ་ཅིག་ལ་བཅད་སོང་། གླིང་པའི་དམག་ཚང་མ་བུད་སོང་། དེ་ནས་ལྟང་ཡུལ་གྱི་ནོར་ཟམ་ཚང་མ་ཁུར་ནས། གླིང་པའི་དམག་ཚང་མ་གླིང་ཡུལ་ཕྱོགས

ཡ་ཡོངས་སོ། ཐང་ཆེན་མོ་ཞིག་གི་ཁར་བསྐྱིབ་སྟེན། མདའ་དཔོན་གྱི་བུ་ཚས་ཟེརས་པ། ཁྲིད་དམག་ཚང་མ་འདིར་འདུག་ཤིག། ང་ལྗོ་ཀུབ་ཡུལ་ལ་སོང་སྟེ། ཇོ་ཇོ་འཁྲུང་བ་ཆེན་ཟེར་ནས་སོང་བས། ལྗོ་ཀུབ་ཡུལ་གྱི་མཇུག་ལ་བསྐྱིབ་པ། དེ་རུ་ལྷ་ཙེ་ཞིག་ཆ་ཙེས་མཐོང་སྟེ། དེ་ལྷ་ཙེ་ཟུམ་སྟེ། ཇ་མ་ལ་མི་དོ་ཞིག་བདག་སྟེ། ལག་པ་ལ་རྡོ་བ་ཞིག་བདག་སྟེ། ལྗོ་ཀུབ་མཁར་གྱི་ཁ་ཐོག་ལ་ཕངས་སོང་། དེ་ཙི་ཕི་ལ་ཕངས་ཟེར་ན། ལྗོ་ཀུབ་ཀྱི་མཁར་དེ་ལ་ཆའིན་ཡོད་རྩུག། ལྷ་ཙེ་མཁར་གྱི་ཁ་ཐོག་ལ་བསྐྱིབ་པ། ཁ་ཐོག་ཚང་མ་ལ་ཁོར་བདངས་པ། ལ་ཆ་ཚང་མ་འདྲི་སྟེ། མཁར་ཚང་མ་བཞིག་སྟེ་ཆའར་རྩུག། ཇོ་ཇོ་འཇིག་སྟེ་མཁར་ནང་ནས་ཕི་སྟུ་རུ་བིང་སྟེ་རྒྱལ་པོ་ལ་ཟེརས་པ། ང་ཁྲོ་རང་གི་སྐྲོགས་བསྐལ་མེད། གླིང་པའི་སྐྲོགས་བསྐལ་ཡིན་ཟེར་གྱིན་ཞིག། མདའ་དཔོན་གྱི་བུ་ཚ་དང་མཉམ་ཤོ་ཡོངས་སོ། མདའ་དཔོན་གྱི་བུ་ཚས་ཇོ་ཇོ་འཁྲིད་དེ་གླིང་པའི་དམག་ཐང་དུ་བསྐྱིབ་སྟེ། རྒྱལ་བུའི་ལག་ཏུ་ཇོ་ཇོ་བདང་སྟེ་ཟེརས། འདི་རིང་ནས་ཕར་ལ་ཇོ་ཇོ་ཁྲོ་རང་ལ་ཁག་ཡིན་ཟེར་ཏེ་བདངས་སོ། དེ་ནས་དེ་རུ་བག་སྟོན་ཞིག་བཙོ་ཡིན་ཟེར་ཏེ། བྲ་བོ་ཟམ་ཞིག་གི་བྲང་རྒྱུས་བཙོས། ཤ་ལག་པ་ཅིག་ཁྲིངས། མར་ཟན་ལྷུ་རུ་གང་གཡོས། ཚང་བུང་པ་ཞིག་ཁྲིང་སྟེ་བག་སྟོན་བཙོས། ཚང་དེ་ཇོ་ཇོས་ཞུས་པ། དེ་དམག་ཚང་མ་ལ་ཞུ་སྟེ་བུང་པ་གང་སྟེ་ལུས་སོ། མར་ཟན་དེ་ཡང་ཚང་མ་ལ་འགྲམ་སྟེ་ལྷུ་རུ་གང་སྟེ་ལུས། དེ་ནས་རྒྱལ་བུ་ཞངས་དེ་བྲ་བོ་ཟམ་གྱི་བྲང་རྒྱུས་དེ་སློས་པ། དེ་དམག་ཚང་མ་ལ་བདང་སྟེ་གྲི་གང་མ་གསོབས་པ་ལུས་སོང་། དེ་ནས་རྒྱལ་བོ་ལངས་དེ་ཟེརས་པ། ཇོ་ཇོས་འགྲམས

མཁན་ཚང་མ་ཡང་གང་སྟེ་ལུས། རྒྱལ་བུ་རང་ལ་བྲང་རྒྱས་གྲི་གོང་མ་གསོལ་བས། དེ་ཅི་དོན་ཡིན་ཟེར་པ། རྒྱལ་བུས། དེའི་དོན་ནི་བུ་མོས་སྟོན་ལ་ཚང་དང་མར་ཟན་འགྲམས་པ། རྟེན་འབྲེལ་མ་གྲིག་པ་ཡིན་ཟེརས་པ། ཀ་སར་གྲིས་རྒྱལ་བུ་བས་ཇོ་ཇོ་རྒྱལ་བ་སོང་བསམ་སྟེ། སྤྲོ་ཡོང་སྟེ་ཇོ་ཇོ་དང་རྒྱལ་བུ་དེ་ཐང་གི་ཁ་བོར་ཏེ། དམག་ཚང་མ་འཁྲིད་དེ་གླིང་ཡུལ་ལ་ཡོངས་སོ། ཇོ་ཇོ་དང་རྒྱལ་བུ་དེ་ཐང་གི་ཁ་ལུས་ཏེ་གཉིས་ཀ་ཏུ་འིན་ཞིག་འདུགས། ཁོང་གཉིས་ཀ་ཏུས་པའི་མཆི་མ་ལ་ས་རྡུས་ནས། ཀ་ལག་དེ་ལ་མཆོད་རྟེན་ཞིག་བཞེངས་ཏེ་བོརས། ཞག་ཅིག་དེ་རྡུ་མི་གཉིས་བསྐྱིབ་སྟེ་ཟེརས། དི་མཆོད་རྟེན་དེ་རྒྱལ་བུ་ཤེལ་དཀར་དང་། ཇོ་ཇོ་ལྷུང་ས་གཡུའི་ཚོ་རོན་མོ་གཉིས་ཀ་ཏུས་པའི་མཆི་མ་ལ་བཞེངས་མཁན་ཞིག་ཡིན་ནོག་ཟེརས་པ། དེ་ཇོ་ཇོ་དང་རྒྱལ་བུ་ལ་ཚོར་ཏེ་འདྲིས་པ། ཅི་ཟེར་འདུག་ལྷ་ཀུན་ནིག་ཟེརས་པ། ཁོང་གིས་ཅང་མ་ཟེརས་ལེ། ཟེརས་པ། ཁོང་གིས་དྲང་པོ་མ་ཟེརས་པའི་སྐྱོན་ལ། ཁོང་ཞག་ཙམ་འགྲུལ་ནའང་། ས་ཐག་མ་ཆོད་པ་དེ་ནས་ཁྲིད་ལ་ལུས་སོང་། དེ་ནས་ཁོང་གིས་བསམ་བློ་བཏངས་པ། ང་དང་འགྲུལ་མི་ཐུབ་པ་དེ་རྒྱལ་བུའི་སྐྱོན་ཡིན་འགྲོ། རྒྱལ་བུ་ལ་འཇུ་ཟེར་ཡིན་ཟེར་ཏེ་རྒྱལ་བུའི་མདུན་ལ་སོང་བ། རྒྱལ་བུས་ཟེརས་པ། སྟོན་ལ་ཁྲིད་ཀུན་གྲིས་ང་ཞ་ལ་དྲང་པོ་མ་ཟེར་བའི་སྐྱོན་ཡིན་ཟེར་གྲིན་ཞིག། རྒྱལ་བུས་སྨོན་ལམ་ཞིག་བཏབ་སྟེ། ཁོང་གར་ཆ་ཅེས་ཡིན་ནའང་། སྐྱིབ་ཤིག་ཟེར་ཏེ་ཕངས་བཏམས་པ། མི་གཉིས་ཀ་བསམ་ས་རྡུ་བསྐྱིབ་སོང་། དེ་ནས་རྒྱལ་བུས་ཇོ་ཇོ་ལ་ཟེརས་པ། ཇོ་ཇོ་ལེ། ཉེ་རང་རང་གི་ཡུལ་ལ་སོང་། ང་ང་རང་གི་ཡུལ་ལ་ཆེན། ཉིང་ནང་དང་ཡང་འཛོམས་པའི་

སྨོན་ལམ་ཡིན་ཟེར་ནས། ཇོ་ཇོ་ལྷོང་ཡུལ་ལ་སོང་། རྒྱལ་བུ་གླིང་ཡུལ་ལ་ཡོང་སྟེ། མཁར་ལ་སོང་སྟེ། དར་དཀར་གྱི་ཡོལ་བ་འཐེན་དེ། ཆ་ལི་ནག་པོ་འི་ཡོལ་བ་བཏང་སྟེ། ནང་ཞིག་གི་ནང་དུ་སྡུག་བཙོ་སྟེ་འདུགས། ཞག་ཅིག་ཇོ་ཇོ་འབྲུག་མའི་གཡོག་མོ་དང་ལྷ་མོ་ཆོད་མོ་ཟེར་མཁན་དེས་ཞིམ་ཞིམ་མི་ཞིམ་མཁར་ནས་བལྟས་པ། གླིང་མཁར་ལ་དར་དཀར་གྱི་ཡོལ་བ་ཕྱུད་དེ། ཆ་ལི་ནག་པོ་འི་ཡོལ་བ་བཏང་སྟེ་ཡོད་ཅེས་མཐོང་སྟེ། ཇོ་ཇོ་འབྲུག་མ་ལ་ཞུས་སོང་། ཇོ་ཇོ་ལེ། ང་དང་གི་མཁར་ལ་དར་གྱི་ཡོལ་བ་ཕྱུང་དེ་ཆ་ལི་ནག་པོ་འི་ཡོལ་བ་བཏང་སྟེ་འདུག། རྒྱལ་བུ་ལ་ཆོར་ཀ་ཞིག་ཡོད་འགྲོ་ཟེརས་པ། དེ་ནས་ཇོ་ཇོ་འབྲུག་མས། གཡས་ལ་ཛ། གཡོན་ལ་ཆང་འཁུར་དེ། གླིང་མཁར་ལ་ཡོང་སྟེ་རྒྱལ་བུ་ལ་ཟེརས་པ། རྒྱལ་བུ་ལེ། ཉི་རང་ལ་ཅི་སོང་། ཅིའི་ཕྱི་ལ་ཆོར་ཀ་རག་ཟེརས་པ། རྒྱལ་བུས་ཟེརས། ང་ལ་ཇོ་ཇོ་ཞིག་ཐོབ་པ། ཨ་བ་ཀ་སར་གྱིས་འཁྱོང་མ་བཅུགས། ང་དེའི་ཕྱི་ལ་ཆོར་ཀ་རག་ཟེརས་པ། ཇོ་ཇོ་འབྲུག་མས། རྒྱལ་བུ་རང་སོང་སྟེ་ཇོ་ཇོ་ཐོབ་ནའང་། དམག་འཁྲིད་དེ་ཆ་ནའང་། སོང་སྟེ་འཁྱོང་ན་རྒྱལ་ལ་ཆེན་ཟེརས་པ། རྒྱལ་བུ་འཕད་ཀྱིན་ཞིག་ཀྲུང་གོད་དབྱེར་པ་ལ་ཞོན་དེ། ལྷོང་ཡུལ་ལ་སོང་། དེ་ནས་ལྷོང་ཡུལ་ལི་མཇུག་ལ་བསྒྲིབ་སྟེ། ཀྲུང་གོད་དབྱེར་པ་ཅན་དབྲའི་ནང་དུ་ཁྲུར་ཏེ་ན། ཁོ་རང་གྲུབ་པ་ཞིག་བཙོ་སྟེ་མཁར་གྱི་སྒོ་ལ་སོང་སྟེ། དར་ཙ་ཞིག་[illegible]་སྟེ། མགུར་མ་ཞིག་བཏང་མས་པ། ཇོ་ཇོ་ལ་ཁོ་འི་སྐད་ཆོར་དེ་སྒོ་ལ་བཞིང་སྟེ་ཡོང་སྟེ། ཁོང་གཉིས་ཀ་ཐུག་སྟེ་མང་པོ་འཕར་སོང་། དེ་ནས་ཇོ་ཇོ་མཁར་ནང་དུ་སོང་སྟེ་ཡབ་རྒྱལ་པོ་ལ་ཞུས་པ། ཡབ་རྒྱལ་པོ་ལེ། འདི་ལྕུང་མཁན་བ་ཡོང་

འདོད་ཅི་འདུག་པ། ང་དང་གི་ཁྲི་ཇྲི་ལ་བོར་ཡིན་ན་ཞུས་པ། རྒྱལ་པོས། བུ་མོ་རང་འཕྲད་ན་བོར་ནའང་གྲིག་ཟེརས་པ། ཁོ་ཁྲོང་སྟེ་ཁྲི་ཇྲི་ལ་བོརས། དེ་ནས་ཁྲི་གཅིག་ལ་ཁྲི་བརྒྱ་ཟམ་ཕེལ་སོང༌། དེའི་དྲིང་ན་ཁོ་ཏ་ཇྲི་ལ་བོར་སོང༌། ཡང་ཏ་གཅིག་ལ་ཏ་བརྒྱ་ཟམ་ཕེལ་སོང༌། དེའི་དྲིང་ན་ཁོ་གསོལ་དཔོན་ལ་བོརས་པ། ཞག་རེ་ལ་ཟན་ཆེར་ལྔ་རེ་བདང་སྟེ། ཕེ། སར། ཤ། ཚང་མ་ས་ཆེར་བ་ལུས། དེ་ནས་ཡང་ཕྱུག་མཛོད་དང་གསོལ་དཔོན་གཉིས་ཀ་ལ་བོར་སོང༌། ཞག་ཅིག་ཇོ་ཇོ་འི་མགོ་ལ་ཤིག་སྡུས་པ་སང༌། ཇོ་ཇོ་ལ་གཉིད་ཡོངས་པ། སྐྲའི་ནང་ནས་རྒྱལ་བུ་ལ་ཀུ་ལིག་ཅིག་ཐོབ་སོང༌། དེ་ཀུ་ལིག་པོ་ཁྲར་དེ་ནང་ཞིག་ལ་བསྒྲིབ་པ། དེ་ནང་དུ་མཆོད་རྟེན་དཀར། ནག། དམར། གསུམ་ཡོད་ཚུག། མཆོད་རྟེན་དཀར་པོ་འི་ཁ་ནས་སྟིང་ལྷ་ཡུལ་མཐོང༌། ནག་པོ་འི་ཁ་ནས་འོག་ཀླུ་ཡུལ་མཐོང༌། དམར་པོ་འི་ཁ་ནས་བར་བཙན་ཡུལ་དང༌། གླིང་ཡུལ་མཐོང་སོང༌། གླིང་ཡུལ་ལ་རྒྱལ་བུ་སྤྱོར་ཏེ་ལོ་མང་པོ་སོང་སྟེ་མ་བསྒྲིབ། ཤི་མཁན་ཡིན་ནོག་ཟེར་ཏེ། གླིང་པ་ཚང་མ་སྡུག་བཙོ་སྟེ་ཡོད་ཅེས་མཐོང་སྟེ། ཁོ་ལ་ངུ་ཅེས་ཡོངས། དེ་ནས་ཁོ་ལོག་སྟེ་ཡོང་སྟེ་ཡང་ཁོས་ཇོ་ཇོ་ལ་ཤིག་སྡུས་པ། ཁོ་འི་མཆི་མ་ཞིག་ཇོ་ཇོ་འི་ཟུ་མཆོག་ནང་དུ་སོང་བ། ཇོ་ཇོ་ལ་གཉིད་ཚད་སོང། དེ་ནས་ཇོ་ཇོས་འདྲིས་པ། རྒྱལ་བུ་ལེ། ཉེ་རང་ཅི་ཕྱི་ལ་ངུས་ཟེརས་པ། རྒྱལ་བུས་ཟེརས། - གླིང་ཡུལ་ལང་མ་བསྒྲིབ་པ་སང། གླིང་པ་ཚང་མ་ལ་སྡུག་བཙོ་སྟེ་འདུག་ཇོ་ཇོ་ལེ། ང་དེའི་ཕྱི་ལ་ངུས་པ་ཡིན། དང་དང་ཆེན་ལེ་ཟེརས་པ། ཇོ་ཇོས་འང་རྒྱལ་ཆེན་ཟེརས། དེ་ནས་ཇོ་ཇོས་རྒྱལ་བུ་ལ་བསྟབས། རྒྱལ་བུ་རང་འདི་ནང་ལ་སོང༌། འདིའི་ཤང་དུ་རྫོར་བུ

མང་པོ་ཡོད། ནོར་བུ་སྦྲུལ་ཤོག་པ་ཡོད། སྦྲུལ་སོ་ཡོད། དེ་ཚང་མས འཛིགས་པ་བསྟན་ཅེན། དེ་ལ་མ་འཛིགས་པ། འདི་ནོར་བུ་ཚང་མ་ངའི་གཟུགས་པོ་ལ་ཐིམ་ཤོག་ཟེར་ནས། སྨོན་ལམ་ཞིག་དེབ་ཟེརས་པ། རྒྱལ་བུ་ནོར་བུ་ཁང་ནང་དུ་སོང་སྟེ། ནོར་བུའི་དཀྱིལ་ལ་སོང་སྟེ། སྨོན་ལམ་བཏབ་ཕྱིན་ཞིག་གླུ་འདི་ལྟར་བཏངས་སོ།

ཁྱེད་ནོར་བུ་ཚང་མས་དངོས་ལ་ཉོན་ལོ།
ཁྱེད་ཁྱེད་ནོར་ཚང་མས་བདག་ལ་གསན་ལོ།
ནོར་བུ་གཅིག་ནི་ངའི་མགོ་ལ་ཐིམས་ཤོག་ལོ།
ནོར་བུ་གཅིག་ནི་མིག་ལ་ཐིམས་ལོ།
ངའི་མིག་གི་འོད་ལ་ཕན་ཤོག་ལོ།
ནོར་བུ་གཅིག་རྣ་མཆོག་ལ་ཐིམས་ལོ།
རྣ་མཆོག་ཤང་པོ་ཆ་ཅེས་ལ་ཕན་ཤོག།
ནོར་བུ་གཅིག་ངའི་ཁ་ལ་ཐིམས་ཤོག།
གཏམ་ལ་མཁས་པ་ཆ་ཅེས་ལ་ཕན་ཤོག།
ནོར་བུ་གཅིག་ནི་ལག་པ་ལ་ཐིམས་ཤོག།
ལག་པ་མཁས་པ་ཆ་ཅེས་ལ་ཕན་ཤོག།
ནོར་བུ་གཅིག་གྲོད་པ་ལ་ཐིམས་ཤོག།
གྲོད་པའི་སྒྲིད་ལ་ཕན་ཤོག།
ནོར་བུ་གཅིག་ནི་རྐང་པ་ལ་ཐིམས་ཤོག།
རྐང་པའི་མགྱོགས་ལ་ཕན་ཤོག།

དེ་ཐུག་ཟེརས་པ། ནོར་བུ་ཚང་མ་ཟེར་མཁན་ནང་ལྷར་ལ་ཁྲིམས་སོང་། དེ་ནས་ཡང་ནང་གཅིག་གི་ནང་དུ། ནོར་བུ་བསམ་ཕེལ་ཟེར་མཁན་ཞིག་ཡོད་པས། དེ་ཡང་རྒྱལ་བུའི་གཟུགས་པོ་ལ་ཁྲིམས་སོ། དེ་ཚང་མ་ཐོབ་ཚར་དེ་ན། ཛེ་ཛེ་དང་རྒྱལ་བུ་གཉིས་ཀ་མཚན་ལ་ཤོར་དེ་ཡོངས། དེ་ནས་ཁོང་གཉིས་ཀ་སྔོན་ལ་ཐུས་པའི་མཆི་མ་ལ་མཆོད་རྟེན་ཞངས་མཁན་གྱི་ས་གནས་སུ་བསྐྱིབ་ནས། དེ་རུ་ཁོང་དགོངས་ལ་ལུས་སོ། དེ་ཙུག་པ་ལྡང་པའི་དམག་རྟིང་རང་ནས་ཡོང་སྟེ། དེ་རུ་ཁོང་ལ་དགུ་རིམ་སྐོར་དེ་ཡོད་ཙུག་པས། ཛེ་ཛེ་སྤྲ་མོ་ནས་ལངས་དེ། དམག་ཚང་མ་མཐོང་སྟེ། རྒྱལ་བུ་ལ་གཉིད་ཚང་དེ་གླུ་ཞིག་བཏངས་སོ།

གླིང་པའི་མི་ཁྲོད་དངོས་ལ་ཉོན་ལོ།
རྒྱལ་བུ་རྒྱལ་ས་བདག་ལ་གསན་ལོ།
ལྡང་པའི་དམག་གིས་དགུ་རིམ་སྐོར་དེ་འདུག།
ལྡང་པའི་དམག་དེ་མང་པོ་བསྐྱིབ་སྟེ་འདུག།
རྒྱལ་བུ་ཉིད་རང་ཞངས་པར་མཛོད་ལོ།
བུ་མོང་རང་འཛིག་འཛིག་རིག་རག་ལོ།

དེ་ཐུག་ཟེརས་པ། རྒྱལ་བུས་ཡང་ལན་དུ་གླུ་ཞིག་བཏངས་སོ།

ཛེ་ཛེ་ཉིད་ཀྱིས་དངོས་ལ་ཉོན་ཅང་།
ལྡངས་ཚེ་རོན་བདག་ལ་གསན་ལོ།
མང་ད་རི་ལ་སྔ་ལོ་ཞིག་མང་ལོ།
ཚོག་ལོ་ཟེར་ན་ཟེར་ཚུང་གཅིག་གིས་ཚོག་ཡིན།

ཛེ་ཛོ་ཞངས་དེ་ཛ་ཞིག་སྙོལ་ལོ།
ང་དང་གཉིས་ཀ་ལ་ཟ་ཅེས་ཤིག་ཅེས་ལོ།

དེ་ཟུག་ཟེར་དེ་ན། རྒྱལ་བུ་ལ་ཡང་གཉིད་ཡོངས་སོ། ཡང་ཛོ་ཛོས་སླུ་ཞིག་བཏངས་སོ།

ཞངས་འང་ཞངས་འང་གླིང་པའི་གླིང་ཕྲུག།
ཞངས་འང་ཞངས་འང་ཨ་མ་གླིན་པའི་གླིན་ཕྲུག།
ལྷང་པའི་ལྷང་དམག་དེ་ཉེ་མོ་ལ་བསླེབ་སོང་།
ཛིང་ན་ང་དང་ལ་བཙོ་ཐབས་རིག་མི་ཡོང་ལོ།

དེ་ཟུག་ཟེར་སམ་པ། རྒྱལ་བུ་ཞངས་དེ་གར་གྱི་སྒོ་བཙུག་སྟེ། ཟ་ཅེས་ཟེ་སྟེ་ན། ཐུ་ཧུ་ལ་སྟོད་པ་ཕྱུལ་ནས་ཡང་གླུ་ཞིག་འདི་ལྟར་བཏངས།

ཨ་ཛེ་བའི་ཐུ་ཧུས་དངོས་ལ་ཉོན་ལོ།
ཀྱང་གྲོད་དབྱེར་པས་བདག་ལ་གསན་ལོ།
ང་དང་གཉིས་ཀས་སྟེང་ལྷ་ཡུལ་ཀུན་བདུལ་པ་ཡིན།
ང་དང་གཉིས་ཀས་བར་བཙན་ཡུལ་ཀུན་བདུལ་པ་ཡིན།
དོ་ནས་འོག་གི་ཀླུ་ཡུལ་ཀུན་བདུལ་པ་ཡིན།
དོ་ནས་བདུད་ཡུལ་མཐིལ་ཀུན་བདུལ་པ་ཡིན།
དོ་ནས་ལྷང་ཡུལ་གཞུང་ཀུན་བདུལ་པ་ཡིན།
དག་ས་ཡང་ལྷང་དམག་ཀུན་བདུལ་ཡིན།
གྲིན་གྲིན་གྲིན་ལ་སེང་གེ་རྒྱང་མཆོངས་རིག་དྲང་ལོ།
ཕུར་ཕུར་ཕུར་ལ་ཁྲ་མོ་འབྲོལ་གྲོས་རིག་དྲང་ལོ།
ཕྲེད་ཕྲེད་ཕྲེད་ལ་ཕོ་རོག་རྒྱུར་མཆོངས་རིག་དྲང་ལོ།

དེ་ཟླུག་ཟེར་གྱིན་ཞིག། ཁྱུང་རྒོད་དབྱེར་པ་ལ་ཞོན་དེ་ན། ལྷུང་པའི་དམག་ཁྲི་ལ་སོང་སྟེ་དམག་ཚང་མ། ཁྲག་གི་རྫིང་བུ་ཁྲིལ། རྟས་པའི་རྫ་ཕབ་སྟེ། མི་གསུམ་ཟླུམ་སྟེ། གཅིག་གི་རྐང་པ་བཅད་ནས། གཅིག་གི་ལག་པ་བཅད་ནས། གཅིག་གི་མིག་བྲུ་སྟེ་ན། ལྷུང་སེ་དམ་རྒྱལ་པོའི་མདུན་ལ་སླེབ་ཤིག་ཟེར་དེ་ཕང་སྟེ་ན། རྒྱལ་བུ་དང་ཛེ་ཛེ་གཉིས་ཀ་གླིང་ཡུལ་ལ་ཡོངས་སོ། གླིང་ཡུལ་ལ་ཞག་ཁ་ཅིག་མ་སླེབ་པ། ཛེ་ཛེས་རྒྱལ་བུ་ལ་ཟེརས་པ། རྒྱལ་བུ་ལེ། ང་དང་གཉིས་ཀ་ལ་གཡོག་པོ་གཅིག་ཀྱང་མེད་པ། གླིང་མཁར་དུ་ག་ཟླུག་ལ་ཆེན་ཟེརས་པ། རྒྱལ་བུས་ཟེརས་པ། ང་དང་གིས་གླིང་མཁར་དུ་ཨ་མ་འབྲུ་གུ་མ་ལ་འཁྲིན་ཞིག་བདང་ཡིན་ཟེར་དེ། ཕོ་རོག་ཁྲ་བོ་ཞིག་དང་འཁྲིན་བདངས། ཨ་མ་ཛེ་ཛེ་ལེ། ང་དང་ཛེ་ཛེ་བསླེབ་འདུག། ང་ཅ་ལ་ཡ་དོ་ཞིག་སྐྱུལ་བར་མཛོད་ཟེར་དེ་བདངས་པ། ཕོ་རོག་དེ་གླིང་མཁར་དུ་སོང་སྟེ་ཨ་མ་འབྲུ་གུ་མོ་ལ་ཟེརས་པ། ཨ་མ་འབྲུ་གུ་མ་འཕར་ཀྱིན་ཞིག། འབྲུ་གུ་མ་ཁོ་རང་དང་། དཔལ་མོའི་ཨ་སྟག། ཁ་རྒྱན་ག་ཉི། མགོང་ར་བུ་ཚ། དཔལ་ལེ་རྒོད་པོ། མོན་དང་སྦྲ་གྲོལ་མོ་དང་བཅས་སུ་སོང་བས། ཞག་གཉིས་ཀྱི་ལམ་དུ་ཐུག་སྟེ། ཁྲོང་ཚང་ར་འཛོམ་ནས་གླིང་མཁར་དུ་བསླེབ་སོང་། དེ་ནས་གླིང་པའི་དཔའ་བོ་དང་ཡུལ་པ་ཚང་མ་མཁར་ནང་དུ་འཛོམ་སྟེ། མཚན་གསུམ་བག་སྟོན། ཉིན་གསུམ་དགའ་སྟོན་བདང་གིན་ཞིག་འདུག་སོ།།

41. The Paladins of the Kesar-saga. A Collection of Sagas from Lower Ladakh. Tale No. V.

By A. H. FRANCKE.

APPENDIX.

The Tale of *γSerri buzhung.*

NOTE.

The tale of *γSerri buzhung* being extremely similar to the last part of the tale of *Gongma buthsa's* boy and *rGyalsa dKarpo,* I do not consider it necessary to give an abstract of contents. Still, it is quite worth while to give the Tibetan text, as it shows again how far certain versions of the Kesar-saga may differ from one village to another. The tale of *γSerri buzhung* represents the Sheh version. It was told by Zarra of Sheh, and written down by Shamuel Joldan of Leh. It has not yet been published in its original form. A small number of copies of it were printed in an arranged form, suitable for school use.

VOCABULARY AND NOTES.

dPallepa, the 'glorious one,' name of one of the ogres; the name is evidently borrowed from that of an Agu.

phimo, perhaps more correctly *pimo,* female mouse; if *phimo* is correct, it could be explained as *phyimo,* foreigner.

'abung, to be put up.

sema, syllables without a meaning, put in only for filling up the line.

rnyil, the same as *snyilba,* throw down.

ra, the same as *dgra,* enemy, see Lad. Grammar, Introduction.

shelli buzhung, the 'crystal boy,' another name of the 'golden boy.'

rgyallu, the same as *rgyalbu,* prince.

khang ngu la phing yin, they will turn them out [of the castle] into a little hut. The general custom of Ladakh. When the children are grown up, they send their parents out of the house.

rting rgyal la, with face turned to the ground.

rtil sbang, horse-dung.

'olgong, milk.

nadnas tong, instead of *nadla tong,* 'give it to the sickness!' a curse. The ablative is often used for dative and terminative.

sog bcings songmabcings 'she who binds sheaves!' name of the golden boy's second wife.

rtsagste, piling up.

'adol, the same as *rdolba,* come out.

dgongs phabces, to make a halt.

chu kha kun, ' water and so on,' that is, butter, soda and milk, in addition
ron, the same as *sgronpa*, cover, lay over. Compare Ladakhi Grammar, Introduction.
riri, exclamation to drive on oxen
khyo khyo, exclamation to drive on horses
snyalo or *rnyalo*, a kind of polygonum.

གསེར་རི་བུ་ཞུང་ངི་སྒྲུངས།

ཨ་བཱ་ཀ་སར་དང་ཨ་མ་འབྲུག་གུ་ས་གཉིས་ལ་ བུ་གསེར་གྱི་བུ་ཆུང་སྐྱེས་ནས། གསེར་གྱི་བུ་ཆུང་ཉི་མིའི་ཕྲུ་གུ་ཀུན་ལྟ་ཆར་ཆར་ལ་ཞག་ལ་ཚར་དེ་ཆེན་མོ་སོང་། ཞག་ཅིག་ལ་ཨ་གུ་པ་ལེ་དང་ཕ་སྤུན་ཀུན་གྱིས་ཟེར་པ། གསེར་གྱི་བུ་ཆུང་ལ་པི་མོ་གསེར་རལ་ཅན་བག་མར་འཁྲིང་དགོས། དེ་ཟུག་ཟེར་མ་ཐོག་ཙོ་ལ་ཕྲུ་གུས་ཚོར་དེ་ཟེར་པ། ང་ལ་ཤོད། ད་ཉིད་རང་ཀུན་གྱིས་ཟེར་མཁན་གྱི་དཔེ་སྐྲ་པོ་མ་བཤད་ན། ངའི་གྲི་ཁྲོ་ཞའི་སྐྱེ། དེ་ཟུག་མོལ་སོང་། དེ་ནས་ཨ་གུ་ཀུན་གྱིས་ཟེར་པ། ཉིད་རང་ལ་བག་མ་པི་མོ་གསེར་རལ་ཅན་འཁྲིང་ཡིན་ཟེར་པ་ཡིན། དེ་ཟུག་ཟེར་དེ་ ཚང་ས་ བག་མ་ འཁྲོང་ ཅེས་ ལ་ཡུལ་ ཆེན་མོ་ ཞིག་གི་ ནང་ལ་ སོང་། དེ་ཙུ་སྐྱིབས་དེ་གུར་དཀར་དམར་སེར་གསུམ་ཕབས། མཁར་ན་རྒྱལ་པོས་གཟིགས་དེ། བོ་མོས་གཡས་ལ་ཟ་དང་གཡོན་ལ་ཆང་དང་། སེ་གིམ་ མི་སྣས་མ་ལ་རྒྱང་གཞུད་སལ་ལེན་ཞིག་དང་ཕེབས་དེ་གླུ་འདི་ལྟར་བླངས།

རྒྱ་གུར་དཀར་པོ་ཞིག་འདི་ན་གནམ་ལ་འབྱུང་སེ་མ་འབྱུང་ལོ།
གུར་ཐག་དཀར་པོ་ཞིག་ས་ལ་རྟོལ་སེ་མ་བརྟོལ་ལོ།

གུར་བེར་དཀར་པོ་ཞིག་ས་ལ་འཛུག་སེ་མ་འཛུག་ལོ།
དེའི་ནང་ན་མི་ཆེན་སྲུ་ཞིག་རང་བཞུགས་ཡོད།
འོ་ན་དེའི་ནང་ན་མི་ཆེན་གང་ཞིག་རང་བཞུགས་ཡོད།
ཉི་ཞ་གཉེན་དེ་ལ་ཕེབས་ས། ར་དེ་ལ་ཕེབས་ལོ།
ཉི་ཞ་གཉེན་དེ་ལ་ཕེབས་ན། མང་མང་རིག་འདུག།
ཉི་ཞ་ར་དེ་ལ་ཕེབས་ན། ཉུང་ཉུང་རིག་འདུག།
རའི་ར་འགོ་སྲུ་ཞིག་རང་ཡིན་འོ་ན།
གཉེན་གྱི་གཉེན་འགོ་སྲུ་ཞིག་རང་ཡིན།
དེ་ཟུག་ཟེར་པ་སང་ཀེ་སར་བེང་སྤྲེ་གླུ་འདི་ལྷུར་གླངས།
ནོ་མོ་གཉེན་ལ་དགའ་ན་གཉེན་ཅིག་ཡིན།
ནོ་མོ་ར་ལ་དགའ་ན་ར་ཞིག་ཡིན།
རའི་ར་འགོ་ཨ་བ་ཀ་སར་ཡིན།
གཉེན་ནི་གཉེན་འགོ་ཤེལ་ལི་བྲུ་ཞུང་ཡིན།
དེ་ནས་བོ་མོ་གུར་དམར་པོ་འི་མདུན་ལ་སོང་སྤྲེ་ཟེར་པ།
རྒྱུ་གུར་དམར་པོ་ཞིག་གནམ་ལ་འབུམ་སེ་མ་འབུམ།
གུར་ཐག་ས་ལ་བརྐྱལ་སེ་བརྐྱལ།
གུར་བེར་ས་ལ་འཛུག་སེ་འཛུག།
དེའི་ནང་ན་མི་ཆེན་གང་ཞིག་བཞུགས་ཡོད།
འོ་ན། དེའི་ནང་ན་མི་ཆེན་གང་ཞིག་བཞུགས་ཡོད།
ཉི་ཞ་ར་ལ་ཕེབས་ས་གཉེན་ལ་ཕེབས།
ཉི་ཞ་གཉེན་ལ་ཕེབས་ན། མང་ཤས་ཤིག་འདུག།

ཉི་ཞ་ར་ལ་ཕེབས་ན། ཉུང་ཟམ་ཤིག་འདུག།
རའི་ར་འགོ་སྤུ་ཞིག་རང་ཡིན།
གཉེན་ནི་གཉེན་འགོ་སྤུ་ཞིག་རང་ཡིན།

དེ་ཟུག་པོ་སོས་གླུ་བཏངས་པ་སང་། ཨ་ཀུ་པ་ལེ་ཕེབས་ནས་གླུ་འདི་ལྷུར་བླངས།

ནོ་མོ་གཉེན་དེ་ལ་དགའ་ན། གཉེན་རིག་ཡིན།
ནོ་མོ་ར་དེ་ལ་དགའ་ནར་ཞིག་ཡིན།
གཉེན་ནི་གཉེན་འགོ་ཤེལ་ལི་བུ་ཞུང་ཡིན།
རའི་ར་འགོ་ཨ་བ་ཀ་སར་ཡིན།

དེ་ཟུག་ཨ་ཀུ་པ་ལེས་ཟེར་པ་སང་། བོ་མོ་གུར་སེར་པོ་འི་ཙར་སོང་ནས།

ཀྱི་གུར་གསེར་པོ་ཞིག་འོ་ན་འབུམས་སེ་མ་འབུམས།
གུར་ཕྲགས་ལ་བསྐྱིལ་སེ་མ་བསྐྱིལ།
གུར་བེར་ས་ལ་འཛུག་སེ་མ་འཛུག།
དེའི་ནང་ན་མི་ཆེན་སྤུ་ཞིག་རང་བཞུགས་འདུག།
དེའི་ནང་ན་མི་ཆེན་གང་ཞིག་རང་བཞུགས་ཡོད།
ཉི་ཞ་གཉེན་ལ་ཕེབས་སར་ལ་ཕེབས།
ཉི་ཞ་གཉེན་ལ་ཕེབས་ནམང་ཨང་རིག་འདུག།
ཉི་ཞ་ར་ལ་ཕེབས་ནཉུང་ཉུང་རིག་འདུག།
གཉེན་གྱི་གཉེན་འགོ་སྤུ་ཞིག་ཡིན།
རའི་ར་འགོ་སྤུ་ཞིག་ཡིན།

དེ་ནས་ཨ་གུ་ཁྲོ་མོ་བཞེངས་ཏེ་འདི་ཟླུག་མོལ་བ།

རའི་ར་འགོང་རིག་ཡིན།
གཅེན་གྱི་གཅེན་འགོང་རིག་ཡིན།
གཡས་ལ་ཡོད་པའི་ཆང་ང་ལ་བླུག།
གཡོན་ལ་ཡོད་པའི་ཇ་ཡང་ང་ལ་བླུག།

ཟེར་པ་སང། བོ་མོས་ཁྱོད་ནི་ཁོ་འི་ཨ་གུ་གུན་གྱི་ནང་ནས་ཅིག་ཡིན་ནོག་ཟེར་ཏེ། ཇ་ཆང་ཚང་མ་ཨ་བྭ་ཀ་སར་དང་ཞེལ་ཡི་བུ་ཞུང་ལ་བླུགས། སོང་སྟེ་རྒྱལ་པོ་བཞུགས་ས་ལ་སོང་སྟེ་མོལ་བ། བག་མ་འདྲི་ཅེས་ཡ་ཡོངས་ས། རྒྱལ་པོས་མོལ་བ། རྒྱལ། ཁྱོད་རང་འཐད་ན། དེ་ཟླུག་རྒྱལ་ཟེར་ཏེ་ཚང་མ་མཁར་ལ་ཁྱེརས། དེ་ནས་ཞག་གསུམ་བག་སྟོན་བཏངས། དེ་ནས་ཟླ་ཅེས་བཏང་ཅེས་སྲུ་ཡང་མ་ཞེས་པ་སང། རྒྱལ་ལུ་དང་རྒྱལ་མོ་གཉིས་ཀས་བཏངས། དེ་ནས་སོང་སྟེ་ཐང་ཞིག་གི་ཁར་བསྐྱབས་པ་སང། ཨ་གུ་གུན་ནིས་ཟེར་པ། རྒྱལ་ལུ་དང་རྒྱལ་མོས་ཨ་བྭ་དང་ཨ་མ་གཉིས་ཀ་ཁང་དུ་ལ་ཕྱིང་ཡིན་ཟེར་འདུག་ཟེར་ཏེ། རྒྱལ་མོ་ཐང་ལ་འཕངས་ཏེ་སོང། རྒྱལ་མོ་དེ་རྩ་དུས་ཏེ་མཆི་མའི་ཕྱུར་ཆུ་ཕོས་ཏེ་ཆུ་མིག་ཅིག་ལ་གྱུར་སོང། དེ་ནས་སྲིན་པོ་དཔལ་ལེ་པ་སྤུན་བདུན་ཡོངས་ཏེ་བོ་མོ་ཁྱེར། ཨ་བ་ཀ་སར་གུན་གླིང་ཡུལ་ལ་བསྐྱབས། བུ་ཞེལ་ལི་བུ་ཞུང་ཙནྡན་གྱི་སྡོང་པོ་ཞིག་ལ་མེ་བཏང་ཏིན་ཞིག་དང། དར་ནག་གི་ཡོལ་བ་ཁང་ལ་འདུག་གིན་ཡོད་པེན། དགས་ཆ་ལི་ནག་པོ་འི་ཡོལ་བ་བཏངས་ཏེ། མགོ་ནུབ་རྟིང་ཀྱུལ་ལ་འདུགས། དེ་ནས་ཨ་མ་འབྲུ་གུམ་ཡོངས་ཏེ་གླུ་འདི་ལྷུར་བླངས།

ཨ་མའི་བྲུ་ཞུང་ལ་ཐུགས་སྐྱོ་ཅི་ལ་བཞེངས།
ཞེལ་ལི་བྲུ་ཞུང་ལ་ཐུགས་སྐྱོ་ཅི་ལ་བཞེངས།
ཞག་དང་ཚནྡནམ་ནེ་ཕྲུ་མི་ཞེས།
འདི་རིང་ཧྲིལ་བང་ཅི་ལ་ཕྲུས།

དེ་ནས་ཨ་མ་འབྲུག་གུ་མནས་ཕེ་མར་འོལ་གོང་ཞིག་བཏངས་དེ། ཕི་མོ་སེ་རལ་ཅན་ནེན་ན་ལ་བཏངས། ཞེལ་ལི་བྲུ་ཞུང་ཁམ་པ་བཙོས་དེ་སོང་། དེ་ནས་དེ་ཐང་ངི་ཁར་སླེབས་པ་སང་། བྲུ་རིག་པ་ཁ་ཅིག་དང་ཐུགས། དེ་བྲུ་རིག་པ་ཀུན་ནེས་ཟེར་པ། ཨ་རྩུ་མིག་པོ་ཕི་མོ་སེ་རལ་ཅན་དུས་པའི་རྩུ་མིག་པོ་ཡིན་ནོག། དེ་ནས་ཞེལ་ལི་བྲུ་ཞུང་ངེས་ཟེར་པ། ཁྲོ་ཞམ་ཅི་ཟེར་ས་ང་ལ་ཞོད། དེ་ཟུག་ཟེར་པ་སང་ཁོ་ཀུན་ནེས་མ་བཞེདས། ཁོ་གུན་ལམ་ནོར་དེ་དེ་ལམ་ལ་ཡང་ལོག་སྟེ་བསླེབས། དེ་ནས་ཁོ་ཀུན་ནེས་བཞེདས། དེ་ནས་ཁམ་པ་བཙོས་དེ་སོང་། དེ་ནས་དཔལ་ལི་པའི་རྩར་བསླེབས། དེ་ནས་ཁྲི་རྫི་བཙོས་པ་ཁྲི་བརྒྱ་ཕེལ། ཧ་རྫི་བཙོས་པ་ཧ་བརྒྱ་ཕེལ། ལུག་རྫི་བཙོས་པ་ལུག་བརྒྱ་ཕེལ། བ་རྫི་བཙོས་པ་བ་བརྒྱ་ཕེལ། དེ་ནས་དཔལ་ལི་ཕ་སྤུན་བདུན་ལ་ཞེས་དེ་བསད་ཡིན་ཟེརས། དེ་ནས་ཕི་མོ་སེར་རལ་ཅན་ནེས་ཟེར་པ། ཧ་གཅིག་ལས་བཏངས་པ་ཧ་བརྒྱ་ཕེལ། ལུག་གཅིག་ལས་བཏངས་པ་ལུག་བརྒྱ་ཕེལ། སྨིན་པོ་པ་ལེ་པས་ནད་ནས་བཏོང་། དེ་ཟུག་ཟེར་པ་བྲུ་ཞུང་བོརས། དེ་ནས་བྲུ་ཞུང་ལ་བག་མ་ལ་སྨིན་པོ་ཀུན་ནེས་སྨོང་མོ་སོག་བཅིངས་སོག་མ་བཅིངས་བག་མ་ལ་བཏངས། དེ་ནས་ཞིག་ཅིག་བྲུ་ཞུང་གིས་ཕི་མོ་གསེར་རལ་ཅན་ལ་ཟེར་པ། ཧང་དང་ཚང་ཀ་ཞེར་ཡིན་ན། དེ་ནས་ཕི་མོ་གསེར་རལ་ཅན་གྱིས་སྨིན་པོ་ཀུན་ལ་ཟེར་པ།

ཨི་སྐྱང་ང་དགུ་ག་ཅི་ཡིན། སྨིན་པོ་ཀུན་གྱིས་ཟེར་པ། ཨི་ཚང་མ་ང་ཞའི་སྨྲོག་པོ་ཡིན། ཕི་མོ་སེར་རལ་ཅན་ཉིས་ཟེར་པ། ཨི་ཚང་མ་ཕིར་ཡོག་ལ་བོར། ང་ཨི་རྒྱ་འདུག་ཡིན། དེ་ནས་ཚང་མ་ཕྱིར་ཡོག་ལ་རྒྱགས་དེ་བོརས། ཕི་མོ་གསེར་རལ་ཅན་ཉིས་ཤེལ་ལི་བྲུ་ཞུང་ལ་ཟེར་པ། ད་ཨི་ཚང་མ་ལ་མདའ་བཏོང་། བདངས་པ་སང་བརྒྱུད་ས་ནས་ས་འདོལ། དེ་ནས་ཁོ་ཀུན་ཤོར་དེ་ཐང་དཀྱིལ་ཞིག་ལ་བསྐྱེབས། དེ་རྒྱ་དགོངས་ཕབས་དེ་འདུགས། དེ་ནས་སྨུ་མོ་སྨིན་པོ་དཔལ་ལེ་པས་དམག་འཁྲོངས། དེ་ནས་ཤེལ་ལི་བྲུ་ཞུང་ངི་གླུ་འདི་ལྟར་གླངས།

ཨོ་ན་བཞེངས་དང་བཞེངས་དང་ཨ་མའི་བྲུ་མོ་བཞེངས།
ཨོ་ན་བཞེངས་དང་བཞེངས་དང་ཕི་མོ་གསེར་རལ་ཅན་བཞེངས།
ཨ་མའི་བྲུ་མོ་གུན་བཞེངས་དེ་ནི། ཛ་ལ་རྒྱུ་ཁ་གུན་འདོང་།
ཕི་མོ་གསེར་རལ་ཅན་བཞེངས་དེ་ནི་ཛ་ལ་རྒྱུ་ཁ་གུན་བཏོང་།
བཞེངས་དང་ཨ་མའི་བྲུ་མོ་བཞེངས།
ཨོ་ན་བཞེངས་དང་བཞེངས་སོག་བཙིངས་སོག་མ་བཙིངས་བཞེངས།
ཨ་མའི་བྲུ་མོ་བཞེངས་དེ་ནི་ཚིབས་ལ་ཚིབས་སྨྲ་རོན།
སོག་བཙིངས་སོག་མ་བཙིངས་བཞེངས་དེ་ནི་ཚིབས་ལ་ཚིབས་སྨྲ་རོན།

དེ་ནས་ཁོ་གཉིས་ལངས་དེ་སྨྲ་བསྡུདས། ཛ་བཙོས། དེ་ནས་ཡོག་སྡུ་གཉིད་ལ་སོང་། དམག་ཡོང་ཅེས་མཐོང་སྟེ། ཕི་མོ་གསེར་རལ་ཅན་གྱིས་ཟེར་པ།

བཞེངས་དང་བཞེངས་དང་ཨ་མའི་བྲུ་ཞུང་བཞེངས།
ཨོ་ན་བཞེངས་དང་བཞེངས་དང་ཨ་མའི་བྲུ་ཞུང་བཞེངས།

འོ་ན་བཞངས་དང་བཞངས་དང་གསེར་གྱི་བྱ་ཞུང་བཞངས།
སྲིན་པོ་དཔལ་ལེ་པའི་དམག་དེ་ནི་ཕྱི་སྐོར་ནང་སྐོར་འདུག།
དེ་ཟླུག་ཟེར་ན་ཡང་ཤེལ་གྱི་བྱ་ཞུང་གཉིད་ལོག་སྡེ་འདུགས།
དེ་ནས་སོག་བཙིངས་སོག་མ་བཙིངས་སོང་སྡེ་ཡང་དེ་ཟླུག་ཟེརས།
དེ་ནས་པི་མོ་གསེར་རལ་ཅན་ལ་སྤྲོ་ཡོངས་ཏེ་ཟེར་པ།
    བཞངས་དང་བཞངས་དང་སྨིན་པའི་བྱ་ཞུང་བཞངས།
    ད་རི་རི་ཟེར་ཡིན་འཁྲིད་འཁྲིད་རིག་གང་བདངས།
    ད་རི་ཁྲོ་ཁྲོ་ཟེར་ཡིན་རྒྱབ་རྒྱབ་རིག་གང་བདངས།
    སྲིན་པོ་པ་ལེ་པའི་དམག་དེ་ནི་ཕྱི་སྐོར་ནང་སྐོར་འདུག།
དེ་ནས་ཤེལ་ལི་བྱ་ཞུང་གིས་ཟེར་པ།
    འོ་ན་མང་ད་མང་ད་རི་ལ་སླ་ལོ་མང་།
    འོ་ན་ཆོད་ན་ཆོད་ན་ཟོར་ཆུང་ཅིག་དང་ཆོད།

དེ་ཟླུག་ཟེར་ཏེ་དམག་ཚང་མ་བསད་དེ། ཁྲག་གི་མཚོ་རྡུས་པའི་རྫ་ཁྲིལ། དེའི་ནང་ལ་སོག་བཙིངས་སོག་མ་བཙིངས་ཡང་འཕངས། དེ་ནས་ཁོ་ཀུན་ཡུལ་ལ་སོང་སྡེ་ཐང་གི་ཁར་བསྐྱིབས་ཅན། རྒྱལ་ལྕམ་ཁོང་རང་སྟོན་ལ་དེ་ནས་འབེ་ས་དང་། བྱ་རིག་པ་གཉུ་ཉིས་མགོ་བསྐོར་བདངས་དེ། ཅི་བྱུང་མཁན་བ་ཤད་དེ། སོང་སྡེ་རྒྱལ་ས་ལ་བསྐྱིབས་ནས། མཚན་གསུམ་བག་སྟོན་དང་། ཉིན་གསུམ་དགའ་སྟོན་བདངས་བ་སང་སླུངས་དང་དཔེ་ར་ཚར།།

42. Note on the Shahin Falcons (*Falco peregrinator* and *F. barbarus*, Blanford).

By Lieut-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

In India, the female of the *shāhīns* is called *shāhīn* and *kohī*; the male *shāhīncha* and *kohela*, and in Persian manuscripts written in India *shāhīn bachcha*. The word *kohī* is derived from the Persian word *koh*[1] a hill, an epithet said to have been given to this falcon to distinguish it from the peregrine, *baḥrī*, "belonging to seas or lakes." In Turki the *shāhīn* is called *lāchīn*[2] and in Arabic, according to Jerdon, *kabarsh*.

Blanford distinguishes two species of 'shahin,' *Falco peregrinator*, which includes the *F. atriceps* of Hume, and *F. barbarus* the *F. babylonicus* or "Red-headed Lanner" of Jerdon. Lieut.-Colonel E. Delmé-Radcliffe, in his pamphlet *Falconry*, says of *F. peregrinator*: "It is no doubt very closely allied to the Barbary falcon of Africa, and * * *."

Panjabi falconers, however, recognise only one species, but distinguish *F. peregrinator* by the name *kālī shāhīn* or "black shahin," and *F. barbarus* by the names *lāl shāhīn* and *lāl-sir shāhīn*, "red shahin" and "red-headed shahin." Two English falconers have told me that they have taken these two species or varieties, the "black" and the "red," out of the same nest.

In the Panjab the "black shahin" is rare, the "red" fairly common.[3] In the Kapurthala State newly-caught young birds of both kinds used to be sold for eight annas or a rupee.

Jerdon states that a female *peregrinator* weighs 1 lb. 10 oz. A young female "red shahin," in good condition, weighed on a 20th September when just caught in Kohat 1 lb. 3¾ oz. A haggard "black shahin" brought to me in Kohat on a third October weighed 1 lb. 14 oz. This bird had not then cast the first flight feathers of its previous year's plumage and its second flight-feathers were two or three inches short of their full length. The weight of a haggard tiercel "red shahin" caught by me in Kohat on a 26th January was 1 lb. 3 oz. A female has usually 17 or 18 scales on the middle toe.

The "red shahin" nests in the hills near Dera Ghazi Khan, Dera Ismail Khan, Kohat, and Peshawar, and I have several times heard of nestlings being taken in the Salt Range.

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[1] In modern Persian *kūh*.

[2] According to Scully, *F. barbarus* is called *lāchīn* in Yarkand.

[3] According to Blanford *F. peregrinator* is found as a resident throughout India, Ceylon, and Burma, though nowhere common; while *F. barbarus* is a "winter visitor into North-western India as far south as the Nerbudda, and as far east as Oudh. A single specimen was obtained near Raipur, C.P., by Mr. Thompson."

Jerdon and Blanford state that *F. peregrinator* is the falcon most highly prized by Indian falconers. This, however, is quite a mistake, for, no practical falconer could or does place the shahin in the same rank as the peregrine. Many Easterns do indeed prefer the saker to the peregrine, but none the shahin.

Though in India the term *shāhīn* is restricted to the two species or races mentioned, yet in Persia and elsewhere it includes the peregrine. Arab falconers in the Persian Gulf call the female peregrine *shāhīna* and more rarely *baḥrīya*; and an Arabic MS. on Falconry says, "If you want to keep shahins[1] keep those of the peregrine (*baḥrī*) kind." The author[2] of the *Bāz-Nāma-yi Nāṣirī* says: "The *shāhīn* is very widely distributed. It is divided into three varieties—the dark, the light, and the yellow. The best are procured from three districts—from *Urūm* in Ottoman territory, from *Ardabīl* in Persia, and from the hills of *Shammar* in Arabia on the road to the holy city of Mecca. The Urūm shāhīn is particularly common in *Sīvās*." Happening to be in *Sīvās* one spring, he called on the Governor, who supplied a guide to conduct him to a shahin's eyrie in a hill-side a few miles from the city. He continues: "I sat down to observe it. My patience was soon rewarded by the appearance of the parent birds bringing food for their young. I observed the birds narrowly, and discovered that they were not shahins but peregrines. I am of opinion that when the nestling is taken it is a *shāhīn*, but that when caught in a net the same bird is a peregrine. What is more, on another occasion in *Sīvās* I met a falconer with a peregrine on his fist. 'What is this,' I asked, 'and what does it catch?' He replied, 'This is a *shāhīn* that I myself took from the nest and trained it' * * *."

Old Persian writers, too, have extolled the shahin in prose and verse. They describe how this swift-winged, sharp-taloned falcon, in stooping to earth is swifter than the rays of the sun, and in mounting to heaven is quicker than the sight of man's eye. It nests, they say, on the crest of a mountain so lofty, that the celestial eagle cannot wing its way thither, whilst the constellation Aquila, in terror of its talons, crouches close in the green nest of the sky.

The popular Indian notion of the "shahin" is gathered from Persian writers, with the natural result that this exceedingly beautiful and well-made falcon has obtained a reputation for nobility that it by no means deserves. Why, its very name means Royal. According to one legend, no less a person than King Jamshed named it so. According to another, two falconers, once observing this falcon for the first time, saw it strike down a partridge. Suddenly an eagle appeared and robbed the falcon. Said one, "Surely the eagle is the king of birds?" As he uttered these words, the baffled and enraged *shāhīn* soared aloft and just as the eagle lowered its head to 'plume' its booty, the falcon made a deadly stoop, and striking the eagle's neck severed its head from its body. Unable to recover itself after the stoop, the noble falcon struck the ground and was lifted by the falconers, lifeless, from out the mud. The other falconer rejoined, "*Shāh-īn-a*,[1] nay, the king is *this*," and hence this newly-discovered species was named *shāhīn*.

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[1] The Persian word *shāhīn* has been adopted into Arabic and given a broken plural *shawāhīn*.

[2] The *Taimur Mirza* mentioned in Blanford's "Eastern Persia," Vol. II, page 103.

The shahins visit the plains of the Panjab in the cold weather, generally not earlier than the middle of September. When, however, the air has been cooled by a thunder-storm in the hot weather, they pay occasional flying-visits to the plains apparently in search of prey. I sometimes noticed odd birds in Dera Ghazi Khan and Dera Ismail Khan in July and August, but they certainly stayed no longer than an hour or two.

On a 13th of May I took a "red shahin's" nest in the Gumal Pass near Dera Ismail Khan. It contained two young birds, male and female, able to fly two or three hundred yards. On a 16th May at Kohat a nestling, a female, was brought to me with the flight and tail-feathers three parts grown, while a few days previously three nestlings had been brought and given to Mr. D. Donald, *Punjab Police.* Marshall, in his "Birds' Nesting in India," records that the eggs of *F. peregrinator* were taken at Raipur (C.P.) on a 25th January: of *F. atriceps* on 12th and 15th February at Jhelum and Etawah respectively; and on 10th March at Kangra.

At the end of November I caught a "red shahin" in the little hill-station of Parachinar under the Peiwar Kotal, and I observed another there on the 6th February. It is probable, therefore, that this species or variety extends into Afghanistan.

Blanford in his *Eastern Persia*, Vol. II., writes: "The falcon described by Marco Polo as found in the mountains of Paríz near Karmán, can be no other than the *Sháhín.* The old traveller says: 'In the mountains of Karmán are found the best falcons in the world. They are inferior in size to the peregrine, red on the breast, under the neck, and between the thighs; their flight is so swift that no bird can escape them.' Yule's Marco Polo, 1, p. 86."

The present writer was for eighteen months in Kerman and found there eyries of three shahins; all as far as could be ascertained through field glasses, of the red species or variety. The "red" species certainly occurs in British Baluchistan, and it would be only natural to find it in Persia. The falcons of *Pāriz* are, however, no longer famous.

In a wild state, in the Panjab, "the red shahin" preys chiefly on doves, paroquets, mainas, partridges, teal, and possibly duck. I have often on the N.-W. Frontier seen a shahin fly close to the ground till directly underneath a flock of starlings, and then suddenly shoot up perpendicularly into their midst. In the dusk it may sometimes be seen killing bats.[1] In Dera Ghazi Khan Cantonment I have seen shahins pick up a paroquet from a number that were feeding on the ground, and carry it off alive. I once caught a young shahin that had the ends of all of its flight feathers in both wings eaten off, apparently by paroquets it had caught. My falconers were one evening catching paroquets by suspending a net between two trees on the route that certain flocks took every evening on their way to roost: they cut the throats of any birds caught and threw them into the verandah of the house. Suddenly a shahin dashed into the verandah and carried off one of the dead parrots.

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[1] شاه این است = شاه اینه

In the Panjab the shahins are now seldom trained. In the Chhach-Hazara district, however, a few are generally kept for "waiting on" flights at teal. The best will kill duck. Elsewhere they are sometimes flown out of the hood at small quarry. An experienced and very skilful Panjabi falconer told me he had often trained shahins to houbara, but that after killing one or two, finding the quarry too strong for them, they invariably gave up and declined this flight altogether. Colonel C. Griffiths, late of the 3rd Sikhs, told me that though he once had a 'cast' of shahins that flew houbara well, this quarry was in reality too strong for them.

Falconers of Chhach-Hazara tell me that young 'passage-hawks' caught later than September are so wedded to small quarry that they are seldom, if ever, of much use.

Shahins are less steady than peregrines. In the spring they become flighty,[2] and are then liable to sail away ignoring every lure. The amount of food given them, too, requires to be more carefully regulated. In a wild state they do not appear to be very persevering; if they fail to take a bird in the first two or three stoops or dashes, they give up and seek a fresh and easier quarry. For a short distance they appear to be faster than peregrines, and are probably more adroit. They have, however, one good quality: they moult quickly and easily and are in flying condition early in the season when peregrines are still in the moult.

As Indians know nothing of "flying at hack," eyess shahins must be kept by them more as pets than anything else. Lieutenant Colonel S. Biddulph, however, has at different times had several eyesses that he 'hacked' and afterwards kept for some seasons; these always flew excellently during the early months of the cold-weather.

The best way to hack hawks in India is to suspend the lid of a basket under a shady spreading tree, and to fill the lid with sand, which should be watered every morning. Even when the hawks have been at hack some weeks, they will lie on the cool damp sand during the heat of the day. They must not be fitted with jesses, or the kites and crows will bully them; nor with bells, else the attention of loafers will be drawn to them. If several birds are hacked together, they are kept amused, and are, I think, less likely to stray far and kill for themselves.

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[1] Though peregrines, red shahins and red-headed merlins kill bats in a wild state, I have found that when well fed and fat during the moult, they rather dislike the flesh.

[2] In the Kapurthala State, where the saker was the favourite falcon, it was the custom to call shahins *yăwă*, i.e., foolish or flighty.

If nestlings are brought able to fly, the best plan is to fit them with jesses and leashes and to get them first accustomed, not only to the basket-lid but to the compound generally. They should then be accustomed to the roof of the house and the view from there. A block may be fixed in the roof and one or two dead pigeons given them at the block, the feathers being allowed to remain. Early one morning, while part of a third or fourth pigeon is being eaten, the jesses should secretly be cut, and the hawk left to its own devices. When it returns to be fed it should be carried quietly, while feeding, to the basket-lid, and left to finish its meal there.

43. Note on the Red-headed Merlin (*Æsalon chicquera* [1]).

By Lieut.-Colonel D. C. Phillott.

In Hindustani this pretty little falcon, peculiar to India, is called *turumtī*, the male being distinguished by the name *tvrumtā*. In Persia, however, the English merlin (*Æsalon regulus*) is called *turumtā*, and, according to Scully, in Eastern Turkistan *turumṭay* (تورومطای). In Persian MSS. written in India, the former is sometimes distinguished by the Turkish epithet *qizil-bāsh*, "red-headed." Though there is a Hindi proverb: *Tīr, turumtī, istrī, chhūtat bāz na-āʼen: Jhūṭ jo māne yihbachan so nar kūṛh kahāen*, "An arrow, a turumtī and a woman return not once they have left their master's hand: The man that thinks this false is certainly a fool," the proverb is certainly a calumny as far as the *turumtī* is concerned.

This little falcon is frequently found near villages, and even in cities, and of course in wooded cantonments. I caught two in the very centre of Jallandhar City, in a sparrow-net erected on the roof of an Indian gentleman's house. Another, one of a pair permanently settled near the Cavalry lines in Bannun, was caught in March, 1893, inside the Cavalry hospital, where it had chased a sparrow.

The Red-headed Merlin can be easily caught in a *bāl-chhatrī*, for it will alight and chase on foot like a *shikra*. The English Merlin, on the contrary, stoops at the bait like a peregrine, and consequently the *bāl-chhatrī* is not a suitable device for snaring it.

The *Turumtī* is larger, stronger, and bolder than the English Merlin, but is not so good at ringing up; in fact I do not think it could be flown at larks. Lieut.-Colonel E Delmé Radcliffe has remarked in '*Falconry*' that "There is less difference of colour between the immature and adult birds in this species, than in any other hawks used in falconry." At first sight there appears to be no difference. The differences that exist in markings are minute. Old birds, however, can be readily distinguished by the greater brightness of their plumage, and in them, too, the legs, cere, etc., are orange, and, not as in young birds, bright lemon. Colonel Delmé Radcliffe also remarks that there is no sexual difference of colour as there is in the English Merlin.

The Red-headed Merlin breeds in the plains in the Panjab in April and May, nesting only in trees. Marshall in his "Birds' Nesting in India" gives the following details of its nesting:

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[1] Chicquera is, according to Jerdon, a corruption of *shikra*, the Hindi name of *Astur badius*.

"Fatehgarh (N.W.P.), 9th January and 4th February, eggs; Allahabad, 27th March, eggs; Hansi, 5th and 28th April, eggs; the Punjab, May, eggs." The *turumtī* attracts attention to its nest by its continuous angry cries when chasing away any kites and crows that dare to approach within a certain distance. The young sometimes leave the nest before they are fully grown and follow the parent-birds, uttering plaintive cries. Young birds are caught in the Panjab when they are strong on the wing and able to fend for themselves. 'Eyesses' of course can easily be obtained and 'flown at hack' for amusement, but 'eyesses' are, of course, harder to train than wild-caught birds, and when trained are inferior.

In a wild state, the Red-headed Merlin preys on small birds. I have seen it kill and eat bats in the dusk. Probably, too, it eats locusts.

In the Panjab it is generally trained to fly at the Indian Roller[1] (*Coracias indica*). I have also taken with one, a few European rollers (*Coracias garrula*), a quarry that is generally supposed to be too difficult for it. In the Kapurthala State it used occasionally to be trained to take paddy-birds at a time when there was a great demand for 'aigrette feathers.' In some parts of the Panjab it used to be trained to doves and hoopoes. The latter bird, though a slow flier, is said to show better sport than even the roller, and to shift from the stoop with marvellous adroitness. The *Turumtī* also kills mainas with the greatest ease, and is said to be occasionally flown at quail and partridges. It would certainly take partridges, for it is perhaps the pluckiest of all the falcons, and when excited or angry does not seem to know what size means.

I have known one, disappointed at the lure, to bind to the *pagri* of the falconer, chattering angrily the while. The same bird, tired of stooping at the lure, fastened on to a pony that was grazing close by, and though the pony rushed off, the hawk did not loosen its hold.

I once bought a very good *turumtī* that killed rollers well: it had been trained to a large white lure made of paddy-birds' wings. Not knowing this I called it to the ordinary black lure of the Panjab, made of crows' wings: it came to it and stoop at it without hesitation. My *sais* once unexpectedly came acros this bird, which had been lost for a night, chasing some birds in a grove. Having no lure he swung his shoe round his head and the *turumtī* at once 'bound' to it and was secured.

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[1] Called *sabzak* in Kupurthala, *chāhān* in the Derajat, *nīl-kardsh* in Kashmir, and *nīl-kanṭh* or "blue-throat" in Oudh and by Hindus generally. It is a messenger of Sītā Jī, and is sacred to Shiva; the sight of it is auspicious to a dying Hindu, or, on Dusserah, to any Hindu. Hence fowlers catch it for Hindus to liberate.

It is easily and quickly caught in a *bāl-chatrī* with a *ghū'ān* or "mole-cricket" as a bait: Jerdon says that a field-mouse is sometimes substituted.

Paddy-birds (*Ardeola grayii*), and night-herons (*Nycticorax griseus*), for 'trains,' are usually caught on their nests in the following manner:—A hoop of thin willow or other wood is made, six or seven inches in diameter Another wooden hoop is fastened like a croquet hoop in an upright position to this, the height of the standing hoop at its highest point being eight or nine inches. Four horse-hair nooses, made of several horse hairs twisted together, are suspended in line from the upright hoop so that each noose just overlaps the other. The hoop thus prepared is placed on the nest of the paddy-bird, which is snared by the neck on re-entering its nest.

Turumtīs, for large quarry—paddy-birds and rollers—should be broken to the hood; but it requires a very skilful hooder, with a small hand and a very light touch, to hood these diminutive hawks without making them hood-shy. If flown at mainas, they need not be hooded.

They must be fed twice a day, and on small birds. Indians, through laziness, sometimes feed them on goat's heart, all the fibre and skin, etc., being removed; so fed they will never be in proper flying condition.

Being permanent residents of India they can be kept through the moult, but it must be a very exceptional bird that repays this keep. The advantage of the red-headed merlin is that, like the *lagar* and *shikra*, it can be flown during the rains, when other hawks are not in working condition, or have not arrived in the country.

Kapurthala falconers [1] have assured me that some thirty years ago it used, in their State, to be trained to kite [2]; and a report was rife in the State that a common crane had once been taken by one. I have, with my own eys, seen a common heron (*Ardea cinerea*) taken by one. His Highness, the late Mīr 'Ali Murād [3] of Sindh, in response to a query, generously sent me two falconers to Dera Ismail Khan with a 'cast' [4] of red-headed merlins trained to this unusual flight. The birds were 'intermewed' ones of one moult, and were not in hard condition. They had apparently never been trained to the lure; the only exercise they got was flying round the head of the falconer at the extent of their long leashes made of a twist of yellow silk, [5] after a morsel of meat waved backwards and forwards in his hand. A heron was duly flushed, and the merlin, unhooded, started in feeble pursuit, fluttering like an uncertain butterfly or like a piece of paper trying to fly. It carried no bell and the heron took no notice of it. Suddenly it sat on the head of the heron, which in its alarmed astonishment fell sprawling on the ground, and was gatherd by the falconer. It was not sport. It was not even a 'flight.'

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[1] The Kapurthala State establishment of hawks and falcons was abolished shortly after 1887. Owing to a lack of supervision, the race of old-fashioned falconers had degenerated into a useless, lazy, and incompetent set of rascals.

[2] *Chil*, Hindustani, and *hil* Panjabi, the name of the common Indian kite (*Milvus govinda*), is sometimes incorrectly given to the white scavenger vulture (*Neophron percnopterus*). The latter, though larger, would be an easier quarry.

[3] An enthusiastic and experienced falconer, and probably the last Indian gentleman of wealth who kept up an old-fashioned establishment of hawks and bird-catchers.

[4] 'Cast' two hawks trained to fly in company.

[5] "A merlin sat upon her wrist
Held by a leash of silken twist."
—*Lay of the Last Minstrel*, Canto VI, 5.

A word on 'artificial flights' generally—if they may be so styled—for which natives of India seem to have always had a passion. In the time of Akbar such flights appear to have been specially studied. Abu'l-Faẓl writes:—

"The *ūdapapar* [1] is brought from Kashmir. This is a greenish bird smaller than a paroquet; it has a red beak, long and straight, and two of its tail feathers [2] are lengthened. It hawks small birds in the air and returns to the fist. Many other birds too are taught to hawk, but it would take too long to detail them all. For instance, the crow [3] is taught to take sparrows, quails, and mainas." Later he says:—

"Frogs are cunningly trained to catch sparrows, a sight that delights the spectators."

Apparently, too, one of the Falconets [4] used to be trained, wild stories regarding its prowess being current; but as the author remarks, "but what has been related about it has not yet been witnessed by us." [5]

Travellers have frequently mentioned eagles as a quarry at which Persians [6] and Arabs flew their hawks, and practical English falconers have doubtless scoffed at these stories.

The system of training for 'artificial flights' is probably in all cases the same. Suppose, for instance, it is intended to train a peregrine tiercel to common crane. The first thing to do is to train the hawk to a lure made of crane's wings. A live crane is then procured, its eyes are seeled, its beak is tied up, its claws are cut, its legs are hobbled, its flight feathers are bound together, and a piece of tough meat is tied on to its back. The hawk is entered to this defenceless 'train' as to the dead lure. The distance is gradually increased and the crane allowed more and more liberty till at last its eyes are unseeled and it is allowed to flap its wings. The hawk binds to the bit of tough meat on the back, and the string attached to the 'train's' legs is pulled so that it falls. An assistant runs up, and feeds the hawk on a pigeon's wing secretly introduced under the crane's wing. The hawk, still feeding, is hooded on the crane and then forcibly removed. The hawk now regards a live crane on the ground as merely a variety of the dead lure, and not more formidable. The falconer next procures a white bullock as a 'stalking-horse,' and trains it to walk slowly while he crouches under its shoulder, guiding it with a small stick and keeping step with its fore feet. By means of the bullock a flock of grazing crane is stalked to within a few yards, and the hawk is cast off and a crane secured before the latter has had time to brush the hawk off its back with its feet, or even to spread its wings to rise from the ground.

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[1] This word is variously spelt in different MSS. Probably the Green Jay or *Cissa sinensis* of Jerdon (the Green Magpie or *Cissa chinensis* of Blanford) is referred to.

[2] The texts are corrupt and run:—

نول او سرخ و راست و دراز ودم کشیده نیز ریزه جانوران الخ. Blochmann reads ودم کشیده تر الخ, but I think the reading should be دو دم کشیده تر الخ: *du dum* in falconers' jargon would mean the two centre tail feathers.

[3] *Kulāgh*; probably the common Indian House-crow (*Corvus splendens*) is meant.

[4] In the texts صولچ ین and صورچین.

[5] آنچه باز گذارند بفراز پیدائي نیامده.

[6] A detailed method of training sakers to eagles, etc., is given in the *Bāz Nāma-yi Nāṣirī*.

Let us not be too hasty in ridiculing the narratives of ancient travellers. They may contain statements that to us appear marvellous, but the mystery is often explained away by minute inquiry.

44. Things which the Owners of Hawks should avoid, being an extract from the *Kitāb*^{u} *'l-Jamharah fī 'Ilm*^{i}*'l-Bazyarah.*[1]

By LIEUT.-COLONEL D. C. PHILLOTT AND MR. R. F. AZOO.

Now the points to be observed by the keeper of hawks are these, that he should not permit anyone to approach to tend the hawks who has sores on his body, for to see such a person the first thing in the morning is abhorrent to hawks. It is beneficial for them[2] to see good-looking persons the first thing in the morning. Neither let anyone who is in a state of ceremonial impurity, carry hawks or approach them, nor let any menstruous woman enter their room, nor even approach them in any circumstances whatever. Neither should any enter their place who is wanting in intellect, such as one who is insane; nor should an epileptic be allowed to approach them. No one should tie them to, or take them from their perches[3] or from their blocks,[4] except one who understands them, and is well-versed in all that benefits or injures them. No cheeta should be tied near any goshawk,[5] or shāhīn,[6] or saker, or near other birds of this kind, no matter how convenient; for the odour of the urine and excrement of cheetas causes *sūzanak*,[7] and the bird will be useless ever after; but there is no harm in tying up a dog near a goshawk unless there be another place for it,[8] or near a shāhīn or saker, especially near a gazelle-saker. All these things—but especially a menstruous woman—should be kept away[9] from birds of prey; for the menstrual discharge is the most unclean thing in the world, and God has ordered that women should not be approached[10] and known[10] during menstruation.

Al-Ḥusayn son of *As-Sa'īdābādī* has related to us, on the authority of *Aḥmad* son of *Abū 'Abd*^{i}*-'llāh Al-Barqī*, on the authority of *Al-Ḥasan* son of *Maḥbūb*, on the authority of *Abū Ayyūb Al-Kharrāz* ("The Cobbler"), on the authority of *Abū 'Ubaydah* who said: "The Apostle of God (the Blessing and Peace of God on him and his Family) once said, 'The Menstruation of women is an uncleanness that God has cast on them as a punishment. Now women in the time of Noah (on him be peace) used to menstruate but once a year; and this state of things continued till certain bold women, seven hundred in number, went in jest and dressed themselves in saffron-dyed apparel,[1] and adorned themselves, and perfumed themselves, and so went out and spread themselves over the country, sitting with men and taking a public share in feasts, and standing up to prayer in the ranks of men. So God cast on those particular women a monthly menstruation as a punishment. Then their blood flowed and they were driven out from the midst of the men; and they continued to menstruate once a month.'" The narrator continues: "So He caused them to be busied with their menstruation and so their naughtiness was abated. The other women who did not act as these did, continued to menstruate only once a year. The sons of those that menstruated monthly took in marriage the daughters of those that menstruated yearly, and so the races became mixed; and their daughters menstruated once a month on account of * * ,[2] while the children of those that menstruated only once a year became fewer and fewer on account of the impurity of the blood.[3] Thus the offspring of the one increased and of the other decreased."

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[1] *Vide* Journal, Asiatic Society of Bengal, Vol. III, No. 2 of 1907.

[2] منها should be لها.

[3] *Kanādir*, pl. of *kandarah*, "a hawk's perch."

[4] *Marābiẓ*, pl. of *marbiẓ*: does this word mean "block" or "ground-perch?" The root meaning is "to crouch on the ground."

[5] *Bāzī*; this word is sometimes used in a general sense for "hawk."

[6] *Shāhīn* P. (in Ar. pl. *shawāhīn*) is a term that includes the peregrine and the shahins.

[7] سوزنک *sūzanak*, P "gonorrhœa"; vulgar for *sūzāk*. The word *sūzanak* is common in this sense in the modern Arabic of Baghdad.

[8] مصلا for مصل? reading evidently corrupt.

[9] The dual يجلبان should apparently be feminine singular for "birds of prey."

[10] The author again uses the dual.

A similar tradition has also been related to us by *Muḥammad* son of *Abū 'Abdi-'llāh*, on the authority of *Sahl* son of *Ziyād Al-Adamī*, on the authority of *Al-Ḥasan* son of *Maḥbūb*, on the authorities that are detailed above.

Muḥammad son of *Ja'far* has related to us, on the authority of *Muḥammad* son of *Ismā'īl*, on the authority of *'Alī* son of *Al-Ḥakam*, on the authority of *Abū Jamīlah*, on the authority of *Jābir*, who said: "We met a certain Companion of the Prophet (the Peace and Blessing of God on him and his Family) and he related to me, 'The daughters of prophets do not menstruate, for menstruation is nothing but a punishment; and the first woman to menstruate was Sarah, as a punishment for that which she did unto Hagar.'"

داب ما ينبغي ان يتجنبه صاحب الضواري - ومما ينبغي له ان لا يجيز الى الضواري ذا عاهة فيكون من جملة الخدم فيها فان الصداع له مكروهٌ ويستحسن مدها التصبيح بالصباح الوجوه - ولا يعمل الضواري من يكون جُنُبًا ولا يقربها ولا يدخل على الضواري امرأةٌ حائضة ولا تقربها ابداً في سائر الاحوال ولا يدخل اليها من لا عقل له كالمجنون ومن يصرع - ولا يشدّها

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[1] The colour for gala days and pleasure-parties.

[2] لاستقامة الحيض meaning not clear. There is an evident omission.

[3] لفساد الدم meaning obscure.

على الكنادر ويحملها من الكنادر او من مرابضها الا من يكون عارفاً بها ذكيًّا في جميع الاحوال مما يضرّها وينفعها ۔ ولا يشدّ عند البازي والشاهين والصقر وما شاكل ذلك فهودٌ ولا في حال الضرورة ابدا فان بول الفهود وسلحها ريحه يورث الضواري السوزنك ولا يفلح الطير من ذلك ابدا ۔ ولا بأس بشد الكلب عند البازي ما لا يكون محلّ[1] وعند الشاهين وعند الصقر خاصّةً صقر الغزال ۔ وتجنَّب [2] جميع ما نهينا عنه خاصّة الحائض ولا يحمل عندها شيءٌ من الضواري فان الحيض انجس ما يكون وان الله امر ان لا يقربن [3] في المحيض ولا يباشرن [4] ابدا ۔ قال وحدثنا الحسين بن السعيد ابادي [5] قال حدثنا احمد بن ابي عبد الله البرقيّ قال حدّثنا الحسن بن محبوب عن ابي ايوب الخرّاز عن ابي عبيدة انه قال قال رسول الله صلى الله عليه وعلى آله وسلّم ان الحيض من النساء نجاسةٌ رماهنَّ الله تعالى بها قال وقد كنَّ النساء في زمن نوح عليه السلام انّما تحيض المرأة في كل سنة حيضةً حتى مزج نسوة من مُجّانهنّ وكنَّ سبعمائة امرأة فانطلقن فلبسن المعصفرات من الثياب وتحلّين وتعطّرن ثم خرجن وتفرّقن في البلاد فجلسن مع الرجال و شهدن الاعياد وصلَّين في صفوفهم فرماهنَّ الله بالحيض عند ذلك في كل شهر اولئك النسوة باعيانهنّ فسالت دماؤهنّ فأخرجن من بين الرجال فكنّ يحضن في كل شهر حيضة قال فشغلهنّ بالحيض وكسر شرّتهنَّ ۔ قال وكان غيرهنّ من النساء اللواتي ما فعلن يحضن كل سنة حيضة ۔ قال فتزوج بنو اللواتي يحضن في كل شهر حيضة بنات اللواتي يحضن في كل سنة حيضة قال فامتزج القوم فحضن بنات هؤلاء في كل شهر حيضة لاستقامة الحيض و قل اولاد اللواتي لا يحضن الا في كل سنة حيضة لفساد الدم ۔ قال فكثر نسل هولاء وقلّ نسل هولاء ۔ حدّثنا محمد بن ابي عبد الله عن سهل بن زياد الادمي عن الحسن بن محبوب باسناده مثله ۔ حدثنا محمد بن جعفر قال حدّثنا محمد بن احمد عن محمد بن اسماعيل عن علي بن الحكم عن ابي جميلة عن جابر انه قال رأينا احد اصحاب رسول الله صلى الله عليه وعلى آله وسلّم وحدثني ان بنات الانبياء لا يطمثن انّما الطمث عقوبة ، انّ اول من طمثت سارة عقوبة بما صنعت بهاجر *

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[1] In MS., محلا

[2] In MS., و يجنبان.

[3] In MS., يقربان.

[4] In MS., يباشرا.

[5] In MS., السعدابادي.

45. The Conquest of Chatgaon, 1666 A.D.

By JADUNATH SARKAR, M.A., *Professor, Patna College.*

INTRODUCTION.

The Bodleian Library's Persian MS. Bod. 589 (Sachau and Ethé's *Catalogue*, No. 240) gives the earliest and most detailed account of the conquest of Chātgāon by Shaista Khān. The value and a few defects of the work have been described by me in this *Journal* for June, 1906. I give below a translation of the passages relating to this subject, supplemented by translations from the *'Ālamgirnāmah*, where it differs or supplies anything new.

It is to be noticed that Shihabuddin Talish makes no mention of the siege of Chātgāon during the day following the arrival of the Mughal forces, and hence there is an inaccuracy of dates in his account. The *'Ālamgirnāmah*, on the other hand, gives a different version of what happened after the first naval battle, and almost ignores the important share which the Feringis had in the naval victories of the Mughals, who were proverbially averse to the sea. It also tells us that *all* the Feringis of Chātgāon did not desert to the Mughals in company with Captain Moor. The pages are mentioned within square brackets.

DECAY OF THE BENGAL FLOTILLA.

[P. 112, *b*.] During the viceroyalty of Prince Shuj'ā, when great confusion was caused by his negligence, [113, *a*] the extortion and violence of the clerks (*mutasaddis*) ruined the *parganahs* assigned for maintaining the *nawwāra* (= flotilla). Many [naval] officers and workmen holding *jāgir* or stipend were overpowered by poverty and starvation. Day by day their distress and ruin increased. When Mir Jumla came to Bengal as Viceroy, he wished to make a new arrangement of the expenditure and *tankhāh* of the flotilla, which amounted to 14 lacs of rupees. After abolishing the old system, and just before beginning the re-organisation, he was overcome by the spells of Assam [*i.e.*, died of the Assam queen's witchcraft]. Many naval officers and men too perished in the expedition; so that at Mir Jumla's death the flotilla was utterly ruined.

[122, *a*.] [Early in 1664] the pirates came to Bagadia, a dependency of Dacca, and defeated Munawwar Khan, zemindar, who was stationed there with the relics of the *nawwāra*—a few broken and rotten boats—and bore the high title of cruising admiral (*sardār-i-sairāb*). Munawwar fled in confusion. Ism'ail Khan Tarin and other Nawwabi officers, whom [Shaista Khan's son, Deputy Governor at Dacca] 'Aqidat Khan had sent with a small force to Munawwar, prevented the crew of their own boats from retreating by turning them round. The crew, on seeing their passengers averse to flight, jumped into the sea and swam ashore to safety. Ism'ail Khan and his comrades boldly made a firm stand and repelled with their bows and guns the enemy who had advanced to seize them. A musket-shot grazed the leg of Ism'ail Khan [122, *b*]. The current drove their sailor-less boats to the bank, and they escaped destruction. The few boats that still belonged to the *nawwāra* were thus lost, and its name alone remained in Bengal.

SHAISTA KHAN'S RESOLVE TO SUPPRESS PIRACY.

On the 8th March, 1664, the new Viceroy, Shaista Khan, entered Rajmahal [the western capital of Bengal]. [115, *b.*] When he learned that the cause of the ravages of the pirates was the power and equipment of their fleet and the delapidation of the Bengal fleet, he gave urgent orders to Mahmud Beg [Abakash, the *dārogha* of the *nawwāra*] to restore the flotilla, wrote to 'Aqidat Khan also [on the subject], accepted the suggestions of Mahmud Beg, appointed at his request Qāzi Samu as *musharraf* of the *nawwāra*, and sent them back to Dacca with robes of honour and presents. As timber and shipwrights were required for repairing and fitting out the ships, to every *mauz'a* of the province that had timber and carpenters, bailiffs (*muhasal*) were sent with warrants (*parwānah*) to take them to Dacca. It was ordered [116, *a*] that at the ports of Hughli, Baleswar, Murang, Chilmari, Jessore, and Karibari, as many boats should be built as possible and sent [to Dacca]. The Nawwab spoke to the Captain of the Dutch, who was present at the audience, "You make vast amounts every year by your trade in the Imperial dominions, for which you have to pay no duty or tithe. For this reason, the path of the profit of Muslim and Hindu *bepārīs* and merchants in the Imperial dominions, especially in Bengal, has been closed. In gratitude for such favour and bounty you should call for ships from your country, and co-operate with the Imperial forces in the expedition against Arracan for extirpating the Maghs, which I have in view. Abolish the factories (*kothī*) that you have in Arracan. Otherwise, know for certain that trade and traffic with you will be forbidden all over the empire, and your gains stopped." The Captain replied, "I cannot agree to this great and serious proposal without first writing to our head, the General [Governor-General of the Dutch Indies], and getting his consent." [116, *b.*] The Nawwab, accepting the Captain's entreaty, said, "Write and call for a reply," and entrusted to the Captain a *parwānah* on the above subject, one suit of *khil'at* and one jewelled saddlecover, for the General. Through God's grace, their help was at last found unnecessary.

As the Feringis engaged in piracy, kidnapping and plundering the inhabitants of Bengal, and lived at Chātgāon under the protection of the zemindar of Arracan, giving half their booty from Bengal to him, the Nawwāb sent Shaikh Ziāuddin Yusuf, one of his own officers, as *dārogha* of the port of Ladhikol,[1] which is near Dacca and where Feringi merchants, engaged in the salt trade, live; he ordered the Shaikh to manage that these Feringis should write to their brethren, the pirates of Chātgāon, offering assurances and hopes of Imperial favours and rewards, and thus make them come and enter the Mughal service. Ziāuddin [117, *a*], too, was to send conciliatory letters [of his own] to them.

SHAISTA KHAN CREATES A NEW FLOTILLA.

On the 13th December, 1664, Shaista Khan first entered Dacca. [137, *b*.] He devoted all his energy to the rebuilding of the flotilla; not for a moment did he forget to mature plans for assembling the crew, providing their rations and needments, and collecting the materials for shipbuilding and shipwrights. Hakim Muhammad Husain, mansabdar, an old, able, learned, trustworthy, and virtuous servant of the Nawwāb, was appointed head of the ship-building department. The *musharrafī* of the flotilla was given, *vice* Qāzī Samu, to Muhammad Muqim, an expert, clever, and hardworking officer serving in Bengal, whom Mir Jumla had left at Dacca in supervision of the *nawwāra* at the time of the Assam expedition. Kishōr Dās, an Imperial officer, a well-informed and experienced clerk, [138, *a*] was appointed to have charge of the *parganahs* of the *nawwāra*, and the stipend of the jagirs assigned to the [naval] officers and men. To all posts of this department expert officers were appointed. Through the ceaseless exertions of the Nawwāb, in a short time nearly 300 ships were built and equipped with [the necessary] materials. Those who had seen the [sorry] plight of the *nawwāra* after the death of Mir Jumla, can understand the great change effected by Shaista Khān in a short time.

SECURING BASES FOR THE WAR.

[139, *b*.] Sangrāmgaṛ is situated at the point of land where the Ganges and the Brahmaputra unite. [140, *a*.] The Nawwāb ordered Muhammad Sharif, the late *faujdār* of Hughli, to go to Sangrāmgar as *thānahdār*, with many men, officers, and guns, and build a fort there. Abul Hassan was posted there with 200 ships to patrol and check the pirates. Muhammad Beg Ābākash, with a hundred ships, was stationed at Dhāpa, to go to reinforce Abul Hassan whenever he heard of the coming of the pirates.

A wide high road (*āl*) was built from Dhāpa[2] to Sangrāmgar, so that even in the monsoons horse and foot could proceed on land from Sangrāmgaṛ to Dacca, a distance of 18 *kos*.

[Sondip was a halfway house between Sangrāmgaṛ and

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[1] In Rennell, Sheet 1, *Luricool*, 18 miles west of Chandpour.

[2] The site of Dhāpa is not given in Rennell.

Chatgāon, and formed an excellent base. Hence, the Nawwāb decided to wrest it from its zemindar Dilāwwar before sending the expedition to Chātgāon. On the 12th November, 1665, Sondip was conquered and a Mughal *thanah* established there. A description of Sondip and the history of its conquest would form another article.]

THE FERINGIS DESERT TO THE MUGHAL SIDE.

[150, *b*.] Ever since his coming to Bengal the Nawwāb had been planning how to put down the root of disturbance, the Feringi pirates, either by winning them over or by slaying them. [151, *a*.] As already narrated, Shaikh Ziāuddin Yusuf told the Feringis of Ladhikol what the Nawwāb had said, and they wrote to their piratical brethren of Chātgāon reassuring them and asking them to visit the Nawwāb. When the Nawwāb was making his progress [from Rajmahal] to Dacca, [151, *b*] the [Portuguese?] Captain of the port of Hughli interviewed him on the way. The Nawwāb, after gracing him with favours, asked him to write to the Feringi pirates of Chātgāon tempting them to come over to the Nawwāb's service. When he reached Dacca, the Captain of Tamluk also was ordered to write letters of invitation to them. When these successive letters arrived at Chātgāon, and the news of the conquest of Sondip and the establishment of a Mughal *thanah* there spread abroad, spies reported these matters to the king of Arracan. The news threw him into terror, and he wrote to his uncle's son, the Governor of Chātgāon, to look carefully to the defence of the country and fort, conciliate the Feringi pirates, and send to Arracan their families and children, and informed him that a large fleet equipped for battle was being shortly sent to Chātgāon for reinforcement. As he had from the above causes come to entertain suspicion [of the fidelity] of the Feringis [152, *a*] he really wished to lure their families to Arracan and massacre the Feringis themselves at Chātgāon at an opportune time. The hearts of the Feringis were distracted and shaken by the arrival of the tempting letters and the news of the Mughal establishment at Sondip. On learning of the wishes of the Magh chief, they fled with their families in 42 *jalbas* to Farhād Khān at Noakhali for protection.[1] [They were taken into Imperial service and liberally rewarded by the Nawwāb.]

INVASION IMMEDIATELY DECIDED ON.

[156, *b*.] Captain Moor, the Feringi leader, reported to the Nawwāb, "Owing to their pride and folly, the king and counsellors of Arracan have neglected the defence and munitions of the fort, and mostly depended on us [for this purpose]. But now that they have heard of the conquest of Sondip, [157, *a*] they have ordered a large army and fleet to reinforce [the defence of Chātgāon]. If the Mughal force attacks the fort before the arrival of this reinforcement, its capture would probably be very easy. The Nawwāb, who had been day and night thinking how to realise this object, regarded the coming over of the Feringis as the commencement of the victory, and decided not to let this opportunity slip.

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[1] The *'Ālamgīrnāmah*, p. 947, says. "The Feringis learning of [the intended Arracanese treachery,] resisted and fought the Arracanese, burnt some of the ships of the latter, and started for service in Bengal with all their goods and ships. On the 19th December, 1665, fifty *jalbas* of the Feringis, full of guns, muskets, and munitions, and all the Feringi families, reached Noakhali."

From Jagdia, the frontier of Mughal Bengal, to Chātgāon, a distance of 30 *kos*, is an utterly desolate wilderness. The expeditionary force would have to be supplied with provisions [from Bengal] till after Chātgāon was reached, besieged, and captured. As the Bengal crew were mortally afraid of the Magh flotilla, [157, *b*] provisions could not be sent by water, though the means of transport in this province are confined to boats. Hence, when in Jahangir's reign, Ibrahim Khān Fatih Jang decided to attack Chātgāon, for two years before setting out he collected provisions at Bhalua and Jagdia.

COMPOSITION OF THE EXPEDITION.

[158, *a*.] It was decided that the Nawwāb's son, Buzurg Ummed Khan, with 4,000 troopers would conduct the campaign while the Nawwāb would look after the work of keeping the army supplied with provisions. If the siege were protracted he would quickly go and join his son. On the 24th December,[1] 1665, at a moment auspicious for making a beginning, [158, *b*] Buzurg Ummed Khan started from Dacca. Under him were appointed Ikhtisās Khān, a commander of 2,500 (1,000 troopers), Sarāndāz Khān, a commander of 1,500 (800 troopers), Farhād Khān, a commander of 1,000 (150 troopers), Qarāwwal Khān, a commander of 1,000 (800 troopers), Rajah Subal Singh Sisodia, a commander of 1,500 (700 troopers), Ibn Husain, *dārogha* of the *nawwāra*, a commander of 800 (200 troopers), Mir Murtaza, *dārogha* of the artillery, a commander of 800 (150 troopers), other Imperial officers with their followings, all the *naqdis* and *āhdis* except a few who were engaged in special works, and 2,500 troopers in the Nawwāb's pay. All the *amīrs*, *mansabdārs*, *sardārs*, and *jamā'dārs* were presented with robes of honour, horses, swords, and shields, according to their ranks. Mir Abul Fath was appointed *diwān* and Muhammad Khalil paymaster and newswriter of the force. From Dacca [159, *a*] Mir Murtaza, and from Sondip Ibn Husain, Muhammad Beg Ābākash, Munawwar Khān zemindar and other zemindars of the *nawwāra*, and Haiāt Khān *jamā'dār* with the Nawwāb's soldiers, who had accompanied him to the conquest of Sondip, were ordered to go to Noakhali, join Farhād Khān and Captain Moor and other Feringi pirates who had come from Chātgāon and entered the Imperial service, and then proceed on land and sea as the van of Buzurg Ummed Khān's army.

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[1] The *'Ālamgirnāmah*, p. 948, gives 25th December as the date, and says that the expeditionary force was composed of "Buzurg Ummed Khan with *two* thousand troopers of the Nawwāb's own *tābinān* (followers), Syed Ikhtisās Khān Barha, Subal Singh Sisodia, Miāna Khan, Karn Khaji and some others."

'Askar Khān, who had been posted to Ghoraghāt, returned opportunely and was stationed at Dacca.[1]

The Imperial fleet under Ibn Husain consisted of 288 ships, as described below:—

Ghurāb ...	21	*Jalba* ...	96
Salb ...	3	*Bachāri* ...	2
Kusa ...	157	*Parenda* ...	6
		[Not specified	3]
			288

NAWWĀB'S VIGOROUS EXERTIONS.

Before this Mir Murtaza had collected many axes at Dacca. [159, *b.*] From the *parganahs*, too, axes had been brought by issuing *parwānahs*, so that several thousands of them had been collected. These were sent with the expedition for clearing the jungle. Every day the Nawwāb wrote to the officers of the expedition letters full of plans and advice, and inquiries addressed to the K͟hān about the condition of the enemy and the state of the road. On the first day [when the expedition left Dacca] the Nawwāb stayed outside [the harem] till noon and again from the time of the '*asar* prayer to one *prahar* of the night, and supervised this business. Even when he was in the harem, if any good plan struck him, he at once sent word to the officers to carry it out. Muhammad Khalil was ordered to keep him daily informed of the occurrences. Shaikh Mubārak, an experienced and trusted servant, appointed to command [160, *a*] the Nawwāb's retainers accompanying Buzurg Ummed Khān, was ordered to report all the daily events, great and small, to the Nawwāb, and give the Khān every advice that he considered fit.

FEEDING THE ARMY.

The officers of the *golahs* (granaries) were ordered that one-half of all the grain that *bepāris* brought into Dacca should be sent to the army. To the *faujdārs* of all parts of Bengal urgent *parwānahs* were issued directing that every kind of provision that they could secure should be despatched to the expeditionary force. *Yasāwals* were appointed by the Nawwāb to see to it. [160, *b*.] So excellent were the Nawwāb's arrangements that from the beginning till now the price of grain in the army has been to the price in Dacca as ten to nine.

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[1] The '*Ālamgīrnāmah*, p. 948, adds: "Kamāl, a former Arracanese king's son, who in Shah Jahan's reign had fled to Dacca from the oppression of the present king, was ordered to accompany Mir Murtaza with a band of the Maghs who lived at Dacca, on the assurance that he would be made chief of his tribe. A letter (*parwānah*), inviting submission to the Mughals and offering conciliatory favours from the Imperial Government, was written to the governor of Chātgāon and sent to him with one of the Maghs."

MUGHAL ADVANCE BY LAND AND SEA.

Buzurg Ummed K͟hān moved quickly on, carried his entire army over the deep river in a few days, crossed the river of Feni,[1] entered the Magh territory, and advanced cutting the jungle and making a road. According to the Nawwāb's command a *thanah* was established on the river of Feni, under Sultan Beg, *mansabdār*, with a contingent of horse and foot. [161, *a*.] As the river of Feni joins the sea, it was feared that the enemy's ships would pass up the river and harass the Imperial army's passage. It was, therefore, decided that out of the commanders at Noakhali, Ibn Husain should advance with the *nawwāra* by the sea and Farhād K͟hān, Mir Murtaza, and Haiāt Khān by land, in aid of the *nawwāra*. If they could, they should enter the Karnfuli river and occupy its mouth, and also attack Chātgāon. Otherwise they should stay in the neighbourhood and wait for Buzurg Ummed Khān's arrival. The jungle was thereafter to be cut along the sea stage by stage, the flotilla to advance by sea and the K͟hān by its coast; in march and halt the land and sea forces were never to be separated.

These officers started from Noakhali. Ibn Husain with the flotilla soon arrived at the creek of Khamaria, two stages from Chātgāon, and began to cut the jungle *before* towards Chātgāon and *behind* towards the advancing army. Farhād K͟hān, Mir Murtaza and other commanders [161, *b*] of the land force too advanced cutting the jungle, and joined hands with Ibn Husain on the 21st January, 1666. Buzurg Ummed K͟hān who was hastening clearing the jungle arrived with the [main] army within three *kos* of Khamaria.

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[1] The *'Ālamgīrnāmah*, p. 949, describes the movements of the expedition thus: "Farhād Khān, appointed a force of pioneers, wood-cutters, and some infantry armed with bows and muskets for making a road and clearing the jungle. On the 12th January, 1666, marching from Noakhali with Mir Murtaza and other comrades, he reached the outpost of Jagdia. Ibn Husain and his comrades on board weighed anchor. On the 14th, Farhād Khān and his party crossed the Feni river and advanced cautiously. On the 20th he reached a tank, from which Chātgāon was one day's journey, and waited for Buzurg Ummed Khān's arrival. That general, after crossing the Feni on the 17th ... ... , arrived on the 21st at a place 8 *kos* behind the position of Farhād Khān and Mir Murtaza, which [latter] was 10 *kos* from Chātgāon fort, and where the jungle was very thick and the road very bad,—and halted there. Farhād Khān daily advanced a little, cutting the jungle and levelling the road. The flotilla waited for the army at Dumria, a dependency of Chātgāon, which was about 20 *kos* from the halting-place of Buzurg Ummed Khan.

First Naval Battle, 23rd *January.*

On the evening of 22nd January,[1] the scouts (*qarāwwals*) of Ibn Husain [167, *b*] brought news that the enemy's flotilla having come from Chātgāon was staying in the creek of Kathalia six hours' journey from their place. Ibn Husain, after informing the Imperial and Nawwābi servants who were on board most of the ships, got ready for action. At night he sent a few ships to the mouth of the creek, telling the passengers to keep a good look out. Next morn, the scouts reported that the enemy's flotilla had started from Kathalia to fight the Imperial *nawwāra* and might come immediately. Ibn Husain, after sending a man to inform Buzurg Ummed Khān of the matter, set out to meet the enemy, though the wind had freshened, and the sea was raging in billows threatening to sink the Imperial ships Abul Qāsim, who was in the ship of Muhammad Beg [168, *a*] Ābākash, narrates that when in this tempest he unmoored his ship to join Ibn Husain, one of the Turkish soldiers standing on the bank cried to M. Beg Ābākash in Turki, "Are you mad, that you put your boat out during tempest in such a deep and terrible sea?" He replied, "Brother, if I were not mad, I should not have become a soldier!" Farhād Khān, Mir Murtaza, and Haiāt Khān advanced by land to co-operate with the navy, following the road cleared by the men of the ships. Beyond the clearing they could not go on account of the density of the jungle.

Ten *ghurābs* and 45 *jalbas* of the enemy came in sight and began to discharge their guns. Captain Moor and the other Feringis, who led the van, boldly steered their ships up to the enemy, Ibn Husain coming behind them. The enemy could not resist the onset; the men of their *ghurābs* jumped overboard, and the *jalbas* took to flight Ibn Husain, seizing the *ghurābs*, wanted to pursue. But the Bengal sailors, who had never even seen in their minds the vision of a victory over the Magh fleet, [168, *b*] objected, saying that that day's victory—the like of which even centenarians had not seen—ought to content them. Ibn Husain had to yield; but, advancing a little from the spot where the *ghurābs* had been captured, he decided to stay there till evening and to return to the creek of Khamaria at night.

Suddenly two or three ships with flags (*bairaq*) were seen afar off. The Maghs, when they left the Kathalia creek that morning for fight and reached the creek of Hurla close to Khamaria, in their pride left their larger ships—called *khālu* and *dhum*,—and [some] other ships here, and sent on only ten *ghurābs* and 45 *jalbas* as sufficient for [defeating and] capturing the Imperial flotilla. The two or three ships with flags now seen were among these *khālus* left in the creek.

Ibn Husain encouraged his crew, saying, "Now that the fugitive *jalbas* have joined their larger fleet, the enemy have surely been seized with terror. It behoves [us] as brave men [169, *a*] not to give the enemy time, nor let the opportunity slip out of our grasp, but to attack them with full reliance on God." These words had effect on the Bengal crew; they agreed and started for Hurla. The enemy learning of it issued from the creek and stood at sea in line of battle. Ibn Husain arriving there found their line stronger than Alexander's rampart. He felt that to run his smaller ships against the [enemy's] larger ones,— whose many guns would, at every discharge, command [his ships],—was to court needless ruin, but that he ought to stop in front of the enemy, engage in firing, and wait for the arrival of his larger ships (*salbs*), when he would put the latter in front and attack the enemy. He therefore began firing his guns and sent a man to hurry up the *salbs* These arrived at the time of the evening prayer. From that time [169, *b*] to dawn, there was cannonade between the two sides.[1]

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[1] Text gives the 24th, which is wrong. The *'Ālamgirnāmah*, p. 950, mentions the 23rd as the day of the *battle* (next day).

SECOND NAVAL ENCOUNTER, 24*th January.*

Next morning, the Muslims flying their victorious banner, beating their drums, and sounding their bugles and trumpets, advanced towards the enemy firing guns and in this order: First the *salbs*, then the *ghurābs*, and last the *jalbas* and *kosas* side by side. The enemy lost all courage and firmness, and thought only of flying. [170, *a*.] They turned the heads of their larger ships away from the Imperialists, attached their *jalbas* to them, and began to tow back these big ships, fighting during their flight.

Ibn Husain without throwing away caution or making rash haste advanced in his previous formation. At last at about 3 P.M., the enemy entered the mouth of the Karnfuli, reached the island in mid stream in front of Chātgāon fort, and drew up their ships off the bank on which Chātgāon stood. The Imperial fleet too came to the Karnfuli and seized its mouth. On the [further] side of the Karnfuli, near the mouth and close to the village called Feringi-bandar, where the Feringi pirates had their houses, the enemy had built three bamboo stockades on the brink of the water, and filled them with artillery, many Telingas (as the fighting men of Arracan are called) and two elephants, in preparation for fight. [170, *b*.] When the Imperial flotilla entered the mouth of the Karnfuli, these forts opened fire on them with muskets and guns. Ibn Husain sent most of his ships up the river and many of the soldiers by the bank, and attacked them. After making some vain efforts the garrison of the stockades took to flight. The Mughals burned the forts and returned.

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[1] The *'Ālamgīrnāmah*, p. 950, says :—" [After the first naval battle] the enemy fled. Ibn Husain with his light and swift ships gave chase and captured 10 *ghurābs* and three *halias* [=*jalbas*] from them. Soon afterwards, the larger ships (*nawwāra-e-buzurg*) of the enemy came in sight, for a second time fought a long and severe fight, and at sunset fled from the scene of action. Ibn Husain pursued them, [p. 951] but as the enemy's ships entered the Karnfuli, and his own larger ships had not come up with him, he thought it inadvisable to advance, but withdrew his fleet to a suitable place, and passed the night in keeping watch.

When Buzurg Ummed Khān heard of it, he wrote strongly urging Farhād Khan and Mir Murtaza not to wait for clearing the jungle, and making a road, but to hasten to join hands with the *nawwāra*. He himself gave up road-making and advanced quickly. Next day [24th January,] Farhad Khān arrived at the bank of the river [Karnfuli.] The enemy lost heart at the sight of the Islamic army."

ARRACAN NAVY ANNIHILATED.

Now with a strong heart and good hope, Ibn Husain dashed upon the enemy's ships. Captain Moor and other Feringi pirates, the Nawwāb's officers [such as] Muhammad Beg Ābākash and Munawwar Khān zemindar, came swiftly from different sides. A great fight was fought. Fire was opened [on the Mughals] from the fort of Chātgāon also. At last the breeze of victory blew on the banners of the Muslims. [171, *a*.] The enemy were vanquished; some of their sailors and soldiers jumped overboard; some remaining in their ships surrendered as prisoners. Most of the former carried off their lives, some being drowned. Many were slain by the swords, arrows, and spears of the victors. A few, reaching the bank, carried the news to the fort. Many of the enemy's ships were sunk by the fire or ramming of the Mughal fleet; the rest, 135 ships, were captured by the Imperialists [1] and consisted of:—

Khālu	... 2	*Kosa*	... 12	
Ghurāb	... 9	*Jalba*	. 67	[Should be 68]
Jāngi	... 22	*Bālām*	... 22	

Meantime, Buzurg Ummed Khān, hearing of the naval battle, [171, *b*] hastened to the neighbourhood of Chātgāon. The *chowkidārs* of the fort informed the garrison of the near approach of the Mughal army. This news and the spectacle of the victory of the Imperial fleet struck such terror into the hearts of the garrison and soldiers of the country, that in spite of their large number they fled.

NIGHT AFTER BATTLE.

That night [2] Ibn Husain, sending to the fort two trustworthy men out of those taken prisoner in the ships, wrote to the *qil'adār* who represented the Rajah of Arracan, "Why would you needlessly destroy yourself and your family? Before you are forcibly seized and sacrificed to our swords, give up your fort, and save your life and property." The *qil'adār*, feeling himself helpless and in need of protection, sent back the reply that [172, *a*] he should be granted respite for the night and that next morning he would admit them.

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[1] The operations in the Karnfuli are thus described in the '*Ālamgīrnāmah*, p. 951 :—"[On the 24th January,] Ibn Husain with the Imperial fleet entered the Karnfuli river and attacked the enemy's fleet that had fled there. A second terrible battle was fought for two *prahars* of the day. At last the Imperialists gained the victory, and the enemy fled, many of them being killed, many others taken prisoner, many drowned after jumping overboard."

[2] The '*Ālamgīrnāmah*, p. 951, writes :—"After the victory the Imperial fleet halted in the Karnfuli below the fort of Chātgāon. Some of the Feringis of Chātgāon who had remained there, and many [p. 952] other Feringis who at

CHĀTGĀON FORT SURRENDERS.

In the morning of the 26th January, 1666, which was the sunset of [the glory of] the Maghs, the commandant opened the fort gate and informed Ibn Husain, who started for the fort. But Munawwar Khān zemindar had entered it before him, and his companions had set fire to it. Ibn Husain entered soon afterwards, and tried his best to put out the fire, but in vain. The fire was so violent that he could not stay there, but came out bringing the *qil'adar* away with himself.

When the fire went out, he again proceeded to the fort and attached the property. He sent the *qila'dār* with the news of victory to the Nawwāb at Dacca, and also informed Buzurg Ummed Khān of the happy event.

The Maghs who were in the fort on the other side of the river fled, and that fort, too, fell into Mughal hands. The peasantry on the further side of the river, [172, *b*] who were mostly Muslims kidnapped from Bengal, attacked the Maghs that fled yesterday and to-day, slew one of their leaders, captured two of their elephants, and brought them to Ibn Husain. Of the four elephants in the fort of Chātgaon, two were burned in the fire and two were secured by the Mughals.

REWARDS TO THE VICTORS.

On the 29th January, the news of the conquest reached Dacca; the Nawwāb after thanking God, began to give to all the army liberal rewards consisting of robes, horses, and elephants,

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this time had come from Arracan to aid them, interviewed Ibn Husain. Captain Moor, who accompanied the Imperial forces in this expedition, did excellent service Next day [25th January,] Buzurg Ummed Khān arrived at the foot of the fort of Chātgāon with the rest of the army. The Imperial forces by land and sea encircled the fort. The garrison, after making great exertions, found that they could not resist the Mughal army, and at last sought safety. The second day of the siege, 26th January, 1666, the Imperial army gained possession of the fort, the whole province of Chātgāon, and the entire artillery and navy of the place'........ [p. 953]. The Governor of Chātgāon, who was the son of the Arracan king's uncle, was taken prisoner with one son and some other relatives, and nearly 350 men of the tribe. 132 ships of war, 1,026 guns made of bronze and iron, many matchlocks and *zamburaks* (camel pieces), much shot and powder, other artillery materials, and three elephants, were captured. Large numbers of the peasants of Bengal who had been carried off and kept prisoner here, were now released from the Magh oppression and returned to their homes."

distributed alms to the poor, and ordered the music of joy to play. Wealth beyond measure was given to the Feringi pirates and one month's pay as bounty to his own officers and the crew of the *nawwāra*.

[173, *a*.] That very day the Nawwāb sent a despatch on the victory to the Emperor. When it arrived at Court,[1] the Emperor ordered joyous music to be played. Rewards were given to all concerned in the conquest: the Nawwāb was presented with a costly jewelled sword of the Emperor, two elephants, two horses with gold trappings, a special *k̲h̲il'at*, and an Imperial *farmān* of praise. [173, *b*.] Buzurg Ummed K̲h̲ān, Farhād K̲h̲ān, Mir Murtaza, Ibn Husain, and Muhammad Beg Ābākash were promoted. Ibn Husain got the title of Mansur[2] Khān, and Mir Murtaza that of Mujāhid Khān.

NEW GOVERNMENT OF CHĀTGĀON.

[175, *b*.] On the 27th January,[3] 1666, Buzurg Ummed Khān entered the fort of Chātgāon, reassured the people that their lives were safe, and firmly forbade his soldiers to oppress the people, in order to cause the place to be well-populated and prosperous.

[Here the Bodleian MS. ends abruptly. I give the concluding portion of the campaign from the *'Ālamgīrnāmah*, pp. 953-956.]

[P. 953.] Buzurg Ummed K̲h̲ān stayed at Chātgāon for some time to settle its affairs. Miāna K̲h̲ān was sent to the north of Chātgāon to reassure the peasantry and to establish a *thānah*. Tāj Miāna, with his followers and 100 musketeers, was appointed as *thānahdār* and guard of the roads from Chātgāon to the bank of the Feni river.

RĀMBU TAKEN AND ABANDONED.

The port of Rāmbu[4] [p. 954] is four days' journey from Chātgāon, and midway between Chātgāon and Arracan. A large body of the enemy defended its fort. Mir Murtaza was ordered to that direction, to win over the peasantry, learn all about the paths and ferries of that region, and if he found it possible to go to the place and besiege it. The Mir, after traversing difficult roads, dense jungles, and terrible rivers, at the end of 12 days arrived within one *kos* of Rāmbu. Next day, at morn he stormed the fort. The Arracan king's brother named Rāwli, who held the government of this place, tried his best to oppose, but being worsted, he fled with the garrison to a jungle close to a hill near the fort. Mir Murtaza giving chase slew many of them and captured many others. Some of the enemy who had taken refuge in the hill [955] came out to surrender, and were made prisoner. Many Muslim ryots of Bengal, who had been kept as captives here, were liberated and returned home.

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[1] "At the end of Sh'abān [February 1666]" according to the *'Ālamgīrnāmah*, p. 956:—"The Emperor ordered Chātgāon to be renamed Islamabad."

[2] *Musaffar*, according to the *'Ālamgīrnāmah*.

[3] The date is left blank in the Bodleian MS.; I have supplied it from the *'Ālamgīrnāmah*.

[4] *Ramoo* in Rennell, Sheet 1.

Buzurg Ummed K͟hān hearing of the victory and learning that the king of Arracan was sending a force by land against Rāmbu, despatched Miāna K͟hān, Jamāl K͟hān Dilzāq, and many others to reinforce Mir Murtaza. The Mir, after his victory, had posted a company of musketeers on the bank of the river one and half a *kos* from Rāmbu, to keep watch for the enemy's arrival. One day suddenly a large force of the enemy with seven elephants issued from the jungle, fell upon the musketeers, and dispersed some of them. Mir Murtaza hearing of it, rode with a force to the bank of the river, and in spite of its water being deep and the enemy having begun to make entrenchments on the [other] bank, boldly plunged in with his comrades and crossed over in safety. The enemy, after a hard fight, fled. The victors pursued, slew and captured many of them, and seized 80 guns, many muskets, and other war materials.

[P. 956.] As the space between Chātgāon and Rāmbu is very hard to cross, full of hills and jungles, and intersected by one or two streams which cannot be crossed without boats, and as in the rainy season the whole path is flooded, and this year there was only a small store of provisions and the rainy season was near,—therefore the sending of the Mughal army into Arracan was put off. Buzurg Ummed Khān, in view of the roads being closed and re-inforcements and provisions being cut off by the rains, very wisely ordered Mir Murtaza to evacuate Rāmbu and fall back with the chiefs, zemindars, prisoners, and peasants of Rāmbu, on Dakhin-kol,[1] which is close to Chātgāon. He did so."

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[1] *i.e.*, 'The southern bank of the river.'

46. The Feringi Pirates of Chatgaon, 1665 A.D.

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[From the contemporary Persian account of Shihabuddin Talish, in MS. Bodleian 589, Sachau and Etho's Catalogue, entry 240. See my article in J.A.S.B., June 1906, pp. 257-260.]

ARRAKAN DESCRIBED.

[153, *a.*] The fort of Chātgāon is an appurtenance of the kingdom of Arracan, which is a large country and great port of the east. One side of it is enclosed by high hills which join the mountains of Ganaser,[1] China, Cathay, and Mahachin. Another side is bordered by the ocean. Deep rivers and wide oceans enclose the western side, which adjoins Bengal. The land and water routes alike for entering the country are very difficult. Its conquest is an extremely hard task. The people of the country are called Maghs—which is an abbreviation of *Muhamil-i-sag* (=despicable dog), according to [the proverb] "the name descends from heaven." They do not admit into their country any other tribe than the Christians, who visit it by the sea-route for purposes of trade. [153, *b.*] Good elephants abound; horses are totally wanting. This writer has heard from the Khān Khānān [Mir Jumla] that the elephants of Arracan surpass all other elephants in beauty of appearance and character. Some mines of metal are said to exist in the country. The inhabitants have no definite faith or religion, but incline [a little] to the Hindu creed. Their learned men are called *Rawlis;* they do not transgress the guidance of the latter in their earthly affairs.[2] The *Rawlis* have the ways of the *Sewrahs* [=Svetambar Jains]. The Rajahs of this country hold pre-eminence over other lower rulers, by reason of their large forces, spacious country, and great splendour. The Governors of the ports and islands of the east always show respect and meekness to them. These rajahs are so proud and foolish that as long as the sun does not decline from the zenith they do not put their heads out of the doors of their palace; they say, "The sun is our younger brother. How can we hold court while he is over our heads and we below him?" In their decrees and letters they give themselves the title of "Elder brother of the Sun, Lord of the Golden House and White Elephant." Of their offspring that [154, *a*] base-born son is considered the proper heir to the throne whom they have begotten on the person of their own sister. After the conquest of Chātgāon [by Shaista Khan] it was found from the records of the place that the year was written as 1127.[1] On being asked to account for the date, the people said that the beginning of the era was the beginning of their Royal dynasty, and that the aforesaid years had passed since the establishment of the rule of these Rajahs. This fact makes it clear that in this long period [of 1127 years] no foreigner had succeeded in conquering the country, and no outsider had got into it. Their cannons are beyond numbering, their flotilla (*nawwāra*) exceeds the waves of the sea [in number]. Most of their ships are *ghurābs* and *jalbas*; *khālus* and *dhums* are larger than *ghurābs*; these are so strongly made of timber with a hard core (*āz chob-i-qalbdār*) that the balls of *zamburāks* and small cannons cannot pierce them. [Latterly] the Rajah appointed the Feringi pirates to plunder Bengal, and hence he did not send the Arracan fleet for the purpose.

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[1] Text has *Kashmshir,* which may be (*a*) Kashmir or (*b*) Garmshir; see *Journal,* A.S.B., No. 1, 1872, p. 76, footnote.

[2] This account is mainly based upon the *Ā'īn-i-Akbarī* (Eng. translation by Jarrett, ii. 119).

OLD CHĀTGĀON DESCRIBED.

[162, *a.*] Chātgāon is a tract adjacent to Bengal and Arracan alike. From Jagdia, where there was a [Mughal] outpost, [162, *b*] to Chātgāon lay a wilderness. On the skirt of the hill was a dense jungle, without any vestige of habitation or living being. The river Feni, rising in the hills of Tipperah, passes by Jagdia[2] and falls into the ocean. Ninety-nine *nullahs*, which contain water even in seasons other than the monsoons, intervene between Feni and Chātgāon. After the capture of Chātgāon, bridges (*pul*) were built by Shaista Khan's order over all these *nullahs*. From Dacca to Chātgāon six creeks (*bahar*) have to be crossed in boats, one of them is the river of Sripur, which is so broad that a boat can perform only one trip across and back in the whole day.

On the bank of the Karnfuli river are some hills, high and low, situated close to each other. The lower hills have been heaped over with earth and raised to the level of the higher ones; all these hills have been scarped cylindrically, fortified, and named the fort [of Chātgāon]. In strength it rivals the rampart of Alexander, and its towers (*burj*) are as high as the *falak-ul-baruj*. [163, *a.*] Fancy cannot sound the depth of its moat, imagination cannot reach its niched parapet.

In the fort has been dug a deep ditch, about eight yards in breadth; on the eastern side, close to the edge of the ditch, flows the river Karnfuli, which descends from the Tipperah hills to the sea. On the north side is a large wide and deep tank close to the ditch. Behind the tank, along the entire north side and a part of the western side, are hills. The hills are so high and the jungle so dense, that it is impossible to traverse them even in imagination. Within the fort two springs flow, the water of which runs into the Karnfuli river in the monsoons, when the channel of the springs becomes so broad that a *jalba* boat can easily pass through it. [163, *b.*] As the people of the fort use all the water [that issues] in seasons other than the rainy, they dam the springs and block the outlet to the Karnfuli river. On a height within the fort is a tomb, known as the *āstanā* of Pir Badar; the attendants of the shrine perform prayer and fast. The Magh infidels[1] . . . . have settled some villages in *waqf* on this tomb; they make pilgrimage to the holy dead and offer presents. It is said that if one could perform the impossible feat of dragging a large gun to the top of the hill at the western angle [of the fort]—which adjoins Tipperah—its balls would fall within the fort. On the other side of the Karnfuli there is a lofty and strong fort, opposite the fort of Chātgāon; it is full of defence-materials.

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[1] This should be 1027. In the Burmese vulgar era, used also in Arracan, 1027 corresponds to 1665 A.D. (*Bengal and Agra Gazetteer*)

[2] In Rennell's *Atlas*, Sheet 1, Jagdia is on the Little Feni River

Every year the Rajah of Arracan sends to Chātgāon a hundred ships full of soldiers and artillery munitions, with a new *Karamkari*[2] (commandant, superintendent), when the former *Karamkari*, with the ships of last year, returns to Arracan There is always some trustworthy relative or faithful clansman of the Rajah in charge of the government of Chātgāon. He issues gold coins stamped with his own name at this place and its dependencies.

[164, *a.*] In bygone times, one of the Sultans of Bengal named Fakhruddin fully conquered Chātgāon, and built an embankment (*āl*) from Chandpur, opposite the outpost of Sripur across the river, to Chātgāon. The mosques and tombs which are situated in Chātgāon were built in Fakhruddin's time. The [existing] ruins prove it.

CHĀTGĀON IN MAGH HANDS.

When Bengal was annexed to the Mughal empire, and included in the records of the *qānūngo* department, in the papers of Bengal Chātgāon was entered as one of the defaulting unsettled [districts]. When the *mutasaddis* of Bengal did not really wish to pay any man whose salary was due, they gave him an assignment on the revenue of Chātgāon! Towards the end of the rule of the Bengal Kings and the early years of the conquest of Bengal by the Mughals, when great confusion prevailed in the country, Chātgāon again fell into the hands of the Maghs, who [164, *b*] did not leave a bird in the air or a beast on the land [from Chātgāon] to Jagdia, the frontier of Bengal, increased the desolation, thickened the jungles, destroyed the *āl*, and closed the road so well that even the snake and the wind could not pass through. They built a strong fort, and left a large fleet to guard it. Gaining composure of mind from the strength of the place, they turned to Bengal, and began to plunder it. None of the Viceroys of Bengal [before Shaista Khan] undertook to put down this trouble and punish them. Only Ibrahim Khan Fatih Jang, in the Emperor Jahangir's reign, resolved to conquer Chātgāon and destroy the wicked Maghs. [The failure of this expedition described, 165, *a*].

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[1] The text is doubtful here کفار مگه سمی شلیدند چند قریه وقف آن روضه ساخته بودند

[2] The *'Ālamgīrnāmah*, p. 947, gives *Karamkabri*.

DOINGS OF THE PIRATES OF CHĀTGĀON.

[122, *b*.] From the reign of the Emperor Akbar, when Bengal was annexed to the Mughal empire, to the time of the conquest of Chātgāon during the viceroyalty of Shaista Khan, Arracan pirates, both Magh and Feringi, used constantly to [come] by the water-route and plunder Bengal. They carried off the Hindus and Muslims, male and female, great and small, few and many, that they could seize, pierced the palms of their hands, passed thin canes through the holes, and [123, *a*] threw them one above another under the deck of their ships. In the same manner as grain is flung to fowl, every morn and evening they threw down from above uncooked rice to the captives as food. On their return to their homes, they employed the few hard-lived captives that survived [this treatment], with great disgrace and insult in tillage and other hard tasks, according to their power. Others were sold to the Dutch, English, and French merchants at the ports of the Deccan.

Sometimes they brought the captives for sale at a high price to Tamluk, and the port of Bāleswar, which is a part of the Imperial dominions and a dependency of the province of Orissa. The manner of the sale was this:—The wretches used to bring the prisoners in their ships, anchor at a short distance from the shore off Tamluk or Bāleswar, and send a man ashore with the news. The local officers, fearing lest the pirates should commit any depredation or kidnapping there, stood on the shore with a number of followers, and sent a man with a sum of money to the pirates. If the terms were satisfactory [123, *b*] the pirates took the money and sent the prisoners with the man. Only the Feringi pirates sold their prisoners. But the Maghs employed all their captives in agriculture and other kinds of service. Many high-born persons and Sayyads, many pure and Sayyad-born women, were compelled to undergo the disgrace of the slavery service or concubinage (*farāsh wa suhabat*) of these wicked men. Muslims underwent such oppression in this region of war (*dār-ul-harb*) as they had not to suffer in Europe. It was less in some Governors' time and more in others'.

As they for a long time continually practised piracy, their country prospered, and their number increased, while Bengal daily became more and more desolate, less and less able to resist and fight them. Not a householder was left on both sides of the rivers on their track from Dacca to Chātgāon. The district of

Bagla,[1] a part of Bengal, lying in their usual path, was [formerly] full of cultivation and houses, and yielded every year a large amount [124, *a*] to the Imperial Government as duty on its betel-nuts. They swept it with the broom of plunder and abduction, leaving none to inhabit a house or kindle a fire in all the tract. Matters came to such a pass that the Governor of Dacca confined his energies to the defence of that city only, and the prevention of the coming of the pirate fleet to Dacca, and stretched some iron chains across the *nullah* of Dacca and set up some bridges of bamboo (*nāī*, reed) on the stream (*nahar*) of the city.

DEMORALISED BENGAL NAVY.

The sailors of the Bengal flotilla were in such a fright, that I may say without exaggeration that whenever 100 war-ships of Bengal sighted four ships of the enemy, if the distance separating them was great the Bengal crew showed fight by flight, considered it a great victory that they had carried off their lives in safety, and became famous in Bengal for their valour and heroism! If the interval was small and the enemy overpowered them, the men of the Bengal ships—rowers, sepoys, and armed men alike—threw themselves without delay into the water, preferring drowning [125, *b*] to captivity.

Once 'Āshur Beg, an officer of Prince Shuj'ā, was cruising with about 200 boats, when a few of the enemy's fleet, in number not even one-tenth of the Imperial flotilla, came in sight. 'Āshur Beg was mortally frightened; in great agitation he cried to the *mānjhī* or captain of his ship, "*Āi bāi āsh bedeh!*"[2] The *mānjhī* in perplexity asked, "*Mir-jiu!* whence can I get broth at such a time? Just now these pirates will cook a nice broth for you!" 'Āshur Beg in agitation and bewilderment kept up crying, "You confounded fellow, give *āsh*," and the *mānjhī* went on replying, "I have not got it with me, whence can I bring it?" [The fact is] sailors use the term *wars* to mean 'backing the boat'; 'Āshur Beg in his terror had forgotten the word and used *āsh* instead! In no other part of the Mughal empire has any neighbouring infidel [king] the power to oppress and domineer over Muslims; but rather do [infidel kings] show all kinds of submission [125, *a*] and humility in order to save their homes and lands, and the [Mughal] officers of those places engage in making new acquisitions by conquest. In Bengal alone the opposite is the case; here the mere preservation of the Imperial dominion is considered a great boon. Those Governors in whose times these piracies were less frequent, congratulated themselves and exulted at it. None of them tried to stop the path of oppression and domination of this wicked tribe through their fear of the necessary expenditure and exertion, weakness of faith and trust, and the [false] notion of their lack of power.

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[1] *Bakla* included Backerganj and part of Dacca (*J.A.S.B.*, Pt. 1., 1873, p. 209).

[2] "Ho, brother, give [me] broth." *Bāi* is the Dacca pronunciation of *Bhāi*.

ROUTES OF THE PIRATES.

[107, *b*.] In Jahangir's reign, [108, *a*] the Magh pirates used to come to Dacca for plunder and abduction, by the *nullah* which leaves the Brahmaputra, passes by Khizrpur, and joins the *nullah* of Dacca. Khizrpur is situated on the bank of the Brahmaputra, on a narrow embankment (*āl*). In the monsoons all the land except the sites of the houses is covered with water. The Governors of Dacca, therefore, at the end of the monsoons and during the winter, which was the season of the coming of the pirates, used to go to Khizrpur with an army and encamp there. After some years, the *nullah* dried up, and many places in the track of the pirates in the Brahmaputra river also became fordable. Thus their [water] route to Dacca was closed on this side, and restricted to the side of Jatrapur [1] and Bikrampur. Recently as the pirates could more easily carry out their chief design of kidnapping men in the villages of Dacca and other *parganahs*, they did not exert themselves to reach Dacca town.

[139, *a*.] When the pirates came from Chātgāon to molest Bengal, they passed by Bhalua, a part of the Imperial dominions, on the right, and the island of Sondip, belonging to the zemindar Dilawwar, on the left, and reached the village of Sangrām-gar. [139, *b*]. [From this point] if they wished to plunder Jessore, Hughli, and Bhusna, they moved up the Ganges; if they wanted to raid Bikrampur, Sonargaon, and Dacca, they proceeded up the Brahmaputra. Sangrāmgarh [2] is the land at the extremity of the island (*i.e.*, delta) which contains Dacca and other towns and villages. In front of it the Ganges and the Brahmaputra unite. The mingled stream, after passing by Bhalua and Sondip, falls into the sea. In ancient times, a man named Sangrām had built a fort here to repel the Magh raids into Bengal. In Hindi a fort is called a *gaṛ*. By the combination of these two words the name of the place has been formed. If a fort were built here and stored with weapons, munitions, and materials of defence, and a large force and well-equipped flotilla kept here, the oppression of the pirates and the raids of the Maghs into Bengal could most probably be prevented.

FERINGI PIRATES.

[150, *b*.] Many Feringis lived happily at Chātgāon [3] and used to come to the Imperial dominion for plunder and abduction. Half their booty they gave to the Rajah of Arracan, and the other half they kept. This tribe was called *Harmad.*[1] They had 100 swift *jalba* boats full of war-materials. The Governors of Bengal were disturbed by their robbery and were too weak to prevent it. As the Harmads [= Feringi pirates] were not in need of the help of the Arracan fleet, the king of Arracan did not send his ships to practise piracy in Mughal territory (Bengal). He considered the Feringi pirates in the light of his servants, and took the booty they brought [as his share].

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[1] In Rennell, Sheet 1, Jattrapur is given 30 miles west of Dacca.

[2] No trace of Sangramgar is found in Rennell. The *'Ālamgirnāmah*, p. 943, says, that its name was changed to 'Alamgirnagar, and that it was 21 *kos* from Sripur (p. 944). It must have been near Rennell's *Mendigunge*. Khafi Khan calls it Sangramnagar, ii. 188.

[3] Their settlement was called *Feringi-bandar* or *Bandar*, on the south bank of the Karnfuli, very close to its mouth.

[In December, 1665, the Feringis of Chātgāon, partly in fear of Arracanese treachery and partly won over by Shaista Khan's tempting overtures] [152, *a*], came with all their families in 42 *jalbas* and took refuge with Farhād Khan, the Mughal *thānahdār* of Noakhali. The Khan sent their chief, Captain Moor, with a few of their great men to Shaista Khan at Dacca, while he kept all the others with their ships at Noakhali, with great attention and kindness. The captain and other leaders of the Feringis had audience of the Nawwāb at night, and received splendid robes of honour and other unexpected favours. The Nawwāb asked them, "What did the zemindar of the Maghs fix as your salary?" The Feringis replied, "Our salary was the Imperial dominion! [152, *b*.] We considered the whole of Bengal as our *jāgīr*. All the twelve months of the year we made our collection [*i.e.*, booty] without trouble. We had not to bother ourselves about *'amlas* and *amīns*; nor had we to render accounts and balances to anybody. Passage over water was our [land-] survey. We never slackened the enhancement of *our* rent, *viz.*, booty. For years we have left no arrears of [this] revenue. We have with us papers of the division of the booty village by village for the last 40 years." One can infer from this answer the condition of things and the weakness of the Governors of Bengal. The coming over of the Feringis gave composure to the hearts of the people of Bengal. [153, *a*.] Two thousand rupees were presented from the Nawwāb's own purse as reward to Captain Moor and the other Feringis who had come from Chātgāon, and from the Imperial Treasury a monthly stipend of Rs. 500 was settled on the Captain, and other comfortable salaries on others of the tribe.

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[1] This word is evidently *armad*, a corruption of *armada*. *Armad* is used in the sense of fleet in the *Kalimat-i-taiyabat*.

47. An Abnormal Branch of the Mango (*Mangifera indica*, Linn.).

By I. H. Burkill and G. C. Bose, M.A.

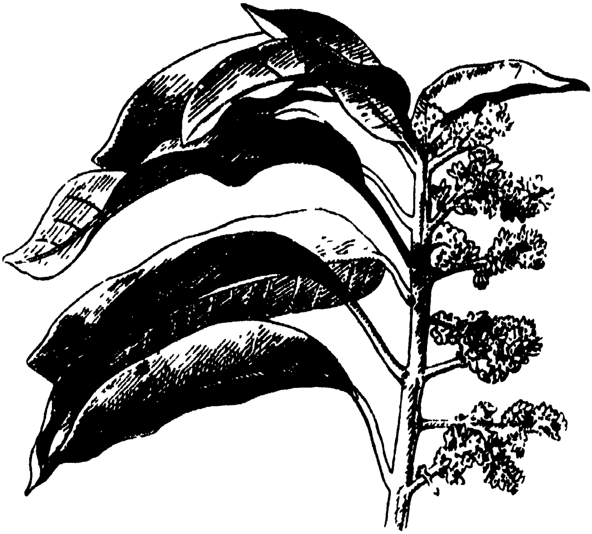


Fig. 1. Abnormal branch.

The specimen, to be described, was obtained from a small grafted plant growing in a plant-pot. The grafted branch was of the race known in Calcutta as "late Bombay," and the stock a seedling mango. The total height of the plant at flowering was but four feet. It bore two abnormal branches, one being very small, the other about six inches long. Both carried leaves on one side, and bracts with flowering axes on the other, the flowering axes corresponding to the secondary branches of an inflorescence. The figure above is from a photograph of the leafy upper half of the larger branch. The leaf-bearing side was green; the flower-bearing side rose-red. The larger branch stood terminally on, and continued, a branch of the previous year which carried foliage leaves evenly on all sides; and above them had produced at the base of the new season's growth the usual scaly bracts.

We have ascertained that the divergence of mango leaves is more or less $\frac{5}{11}$. The eleven radii are shown in the following diagram, figure 2, with the distribution of the leaves, and of the secondary flower-bearing axes on them. From it better than from figure 1, the reader will realise that all the foliage leaves developed, were developed on one side of the stem. The diagram further indicates how the branch at first produced nothing but flowering secondary axes, and that it then became sterile on one side, carrying foliage leaves on that side and, in the axils of the foliage leaves, the usual arrested buds.

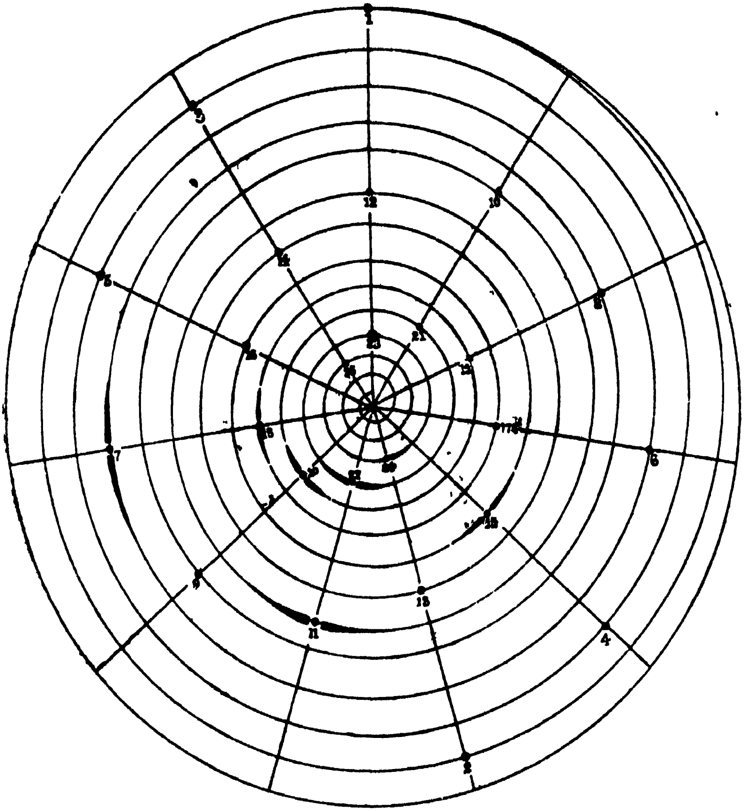
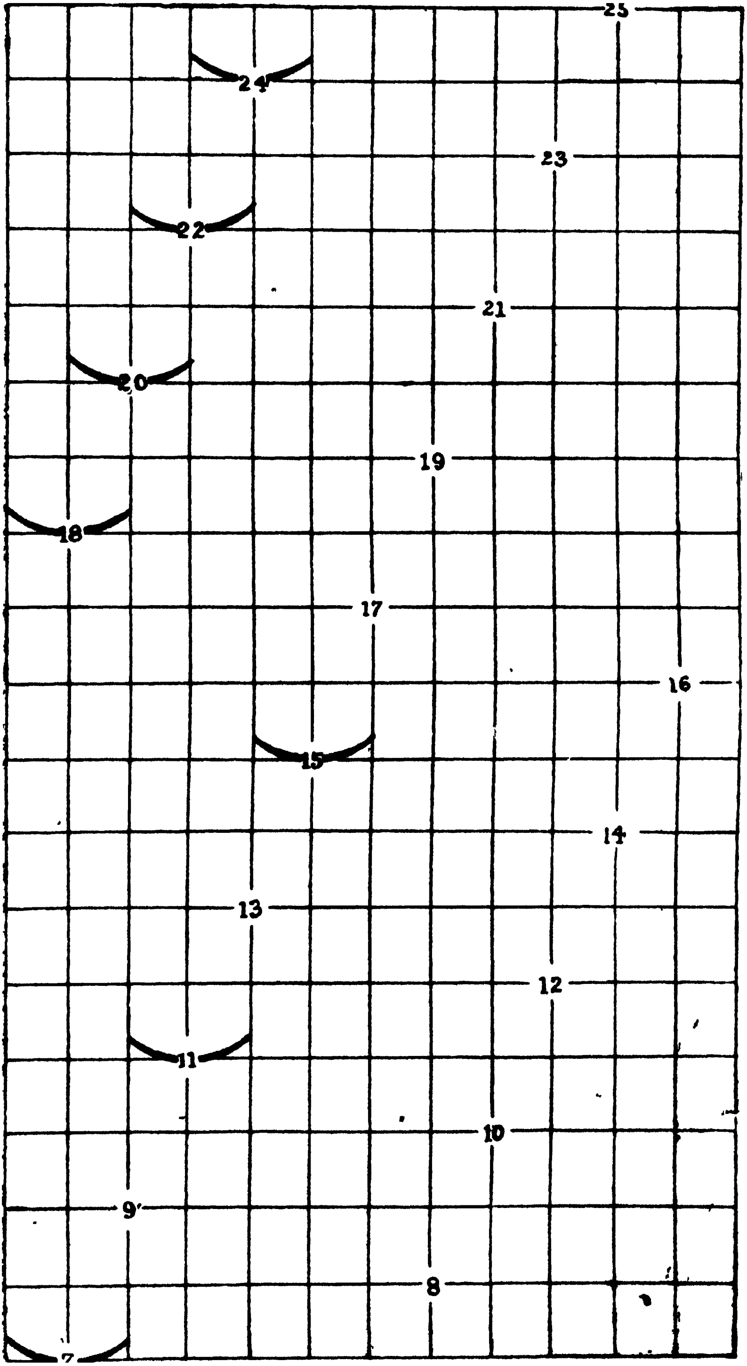


Fig. 2.

At first every fourth organ was a foliage-leaf, but later every other. Figure 3 opposite is inserted to indicate this: it represents the branch cut open along one side and unrolled so that its whole circumference is towards the reader.

At the end of the branch, but obliquely, were to be found the small scales of the terminal bud. This terminal bud was twisted towards the foliage side of the branch.



Anatomical differences accompanied the differentiation of the two sides of the branch. There was an inequality in the development of the vascular ring, indicated in the next figure.

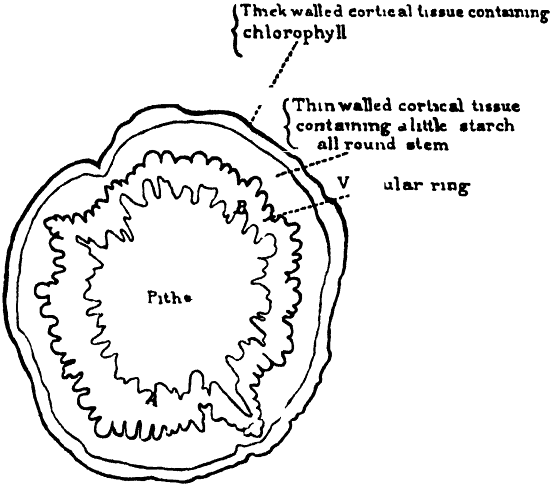

Thick walled cortical tissue containing chlorophyll
Thin walled cortical tissue containing a little starch all round stem
V ular ring
B
Pith
A

Fig 4 Stem in section between the first and second axils

It is seen that the vascular tissue was thicker on the foliage side than on the flowering side. Very much of this was due to the greater development of the xylem. In figures 5 and 6 we give drawings of the xylem of two bundles whose positions are indicated by the letters *A* and *B* on the figure 4. These bundles were selected for illustration as typical of the bundles on the two extreme sides of the stem. It is seen at once how much greater is the development of the wood-fibres on the foliage side, and that the vessels—the larger are pitted, the smaller are spiral—are wider on that side. The drawings were made by means of a camera lucida and are accurate.

There was not the same difference in the phloem, nor in the other tissues, which were, more or less, equally developed all round the stem.

The axis of a normal mango inflorescence, which has not begun to bear fruit, is in anatomy like the flowering side of our abnormality; while the greater development of wood on the other side is as in a leafy shoot. The reader, however, will note that the section, from which the drawings were made, was from between the first and second axils, *i.e.*, from some way below the region where the leaves first appeared: in point of actual distance about two inches. Thus in the structure of this abnormal stem, the transpiring leaves had a better channel of communication with the source, below, of the water that they required, than had

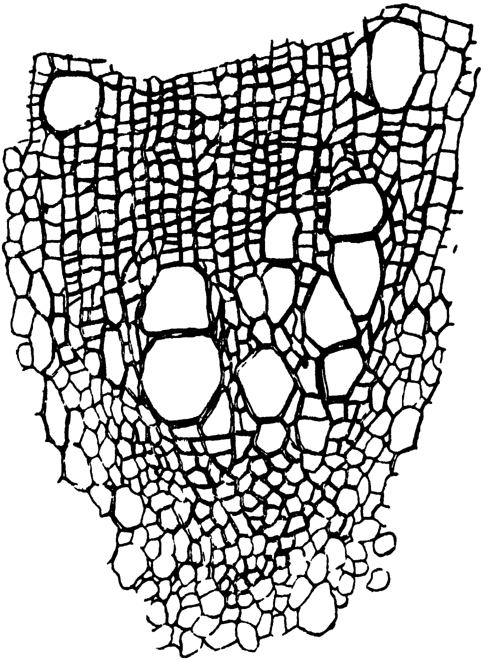


Fig. 5. Xylem from foliage side of the shoot.

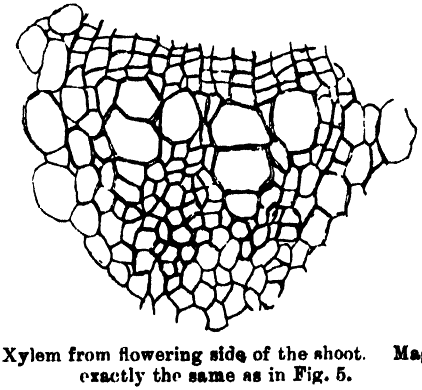


Fig. 6. Xylem from flowering side of the shoot. Magnification exactly the same as in Fig. 5.

the flowering secondary axes on the other side. The result is not contrary to expectation: yet it would be interesting to see if an exactly similar condition could be produced by the very early defoliation of a shoot along one side, and through what length of stem.

And if it should be produced, it would indicate how greatly in the mango the anatomical difference between a leafy shoot and the inflorescence, is a direct response to the needs of the shoot. Miyoshi (Journ. Coll. Sci. Imperial Univ. Tokyo, xv., 1901, p. 459, quoted from Just's Jahresbericht, 1903, ii., p. 634) showed that the repeated plucking of mulberry leaves, as is done for feeding silk-worms, leads to an arrest of the growth of the wood as one of the signs of the disease produced. In our abnormal branch, where towards its upper part the leaves occupied a part of the larger circumference, the small bundles occupied a smaller part of the circumference; so that in anatomy as in morphology, the branch had progressed from the fertile towards the sterile condition. But as we have seen, the sterile condition—greater development of wood—passed down it through the lower wholly fertile part on the side where above the leaves were.

48. Methods of catching wild fowl, herons and other water birds in the Panjab, Sindh, and Kashmir.

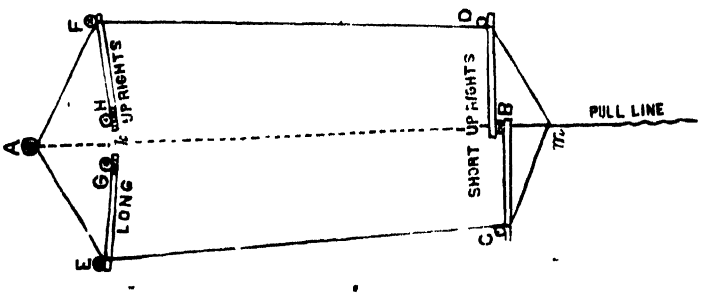
By Lt.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

Indian methods of catching wild fowl are many and ingenious. In the large jheels and lakes of the Panjab and Sindh, most of the duck that find their way to the market are caught by means of a net laid in shallow water, a primitive form of the clap-nets of English bird-catchers. In India, however, the net is a single one, laid out and worked as detailed below. For duck, the bait is merely gram strewn on the water, but for herons and storks a small tank is made within the limits of the net, the tank being stocked with small fish. On a dark night jackals may steal in and devour the fish.

In Kashmir herons are, in winter, snared for their plumes, by a method that seems peculiar to the valley. The plumes are worn by the Maharaja as a pagri-ornament, and also at weddings by bridegrooms, Muslim and Hindu. Theoretically herons are preserved, so before a wedding a bridegroom has to be granted special permission to snare a fixed number, permission being granted on condition that he plucks out the plumes from the live birds and then releases them. However, Kashmiris I have questioned, have all admitted that herons are not bad eating

Fig. I

Net for Catching Herons, Ducks, etc.



A—principal peg.
A to B—24 ft
A to *k*—5 ft.
G to H—14 inches.
A to E
A to F } 6 ft. 4 in.

E to C
F to D } —19 ft. 7 in.
B to *m*—3 ft 6 in.
C to *m*
D to *m* } —5 ft. 8 in.

Note.—The uprights GE, HF are inclined towards A, but BC, BD are at right angles to the line AB.

Small hollows are made in the ground at G, H, and B, so that the butt ends of the uprights are about three inches lower than the tips The butts must work easily when the uprights are raised. The top line AECmDF is fastened to the tips of the uprights by half-hitches, which are fastened with the *hitch outwards.*

REQUISITES.

(1) A net[1] about 21 yds. long.
Breadth, 26 meshes.
Size of mesh, 2¼ in. square.
(2) One peg (principal A) 2 ft. long.
(3) Four pegs about 18 inches long.
(4) Two uprights 5 ft. 3½ in. long, with both butts lashed to the same peg, (B, 18 inches long), so that they work easily: tips of uprights to be pointed.
(5) Two uprights 5 ft. 5½ inches long, each lashed to separate pegs G and H; each peg is 18 inches long: uprights to work as above.
(6) Thirty to 60 yards of thick wire as a pull line.
(7) A mallet to hammer in the pegs.
(8) A net to catch small fish.

To lay the net.—Drive in the principal peg A (Fig. I). Double the net, and fasten by a clove-hitch on to A the upper (or stouter) cord, at its centre. Bring the ends of the stout upper cord together and (pulling the ends taut) carry them in a straight line to *m* or past *m*. Keep the lower edges of the net outwards, to the right and left of the stout cord. Run the net along the upper cord towards A for about three yards and drive in peg B, which should be about 24 ft. from A, and about 6 ft. 6 in. from the ends of the stout cord when laid down on the ground. Scoop out the ground round B, so that the short uprights can be raised easily at right angles to the ground: the butts of the uprights will consequently (when the uprights are laid out as in sketch) be lower than the tips: the tips should be about 3 inches from the ground.

Raise the uprights BC, BD at right angles to the ground, keeping the tips together. Pull the upper cords taut from A, over the tips of the uprights C and D. Next measure off along the cord in the pull direction, from the point where it passes over the tips C and D, one cubit's length (from the elbow to tip of the middle finger) or about 20 in., and at this point fasten the upper cords, by clove-hitches, to the tips C and D: the hitches to be outwards, so that the line of the cord passes on the *inside* of the uprights.

Now lay down these uprights, outwards, on the ground, pulling the cords taut away from A (Fig. II). Measure off A*o*, A*p* (Fig. II) equal to the length of the long uprights (*i.e.*, 5 ft. 5½ in. or 5 ft. 6 in.) plus a good hand's breadth. The points *o* and *p* will be about fourteen inches apart. Then at the points *o* and *p* drive in the pegs G and H (to which the butts of the long uprights are lashed) on the inside of the line, *vide* Figs. I and II. Make a small hollow as before, round the pegs, to allow the butts to work easily when the uprights are raised. The pegs G and H (Fig. II) will be about 14 in. apart.

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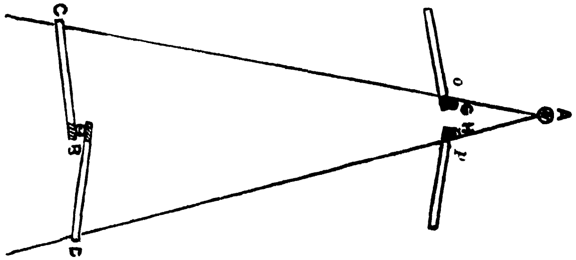
[1] A fine cord must be threaded through the upper edge of the net along its length, and a piece of twine along the bottom edge throughout the length.

Fig II.



Next get an assistant to raise the *short* uprights at right angles to the ground, making their tips meet. Then raise the *long* uprights and pass the cords over their tips, and, at the point where the cords pass over their tips, fasten the cords to the tips by clove-hitches, taking care that the hitches are on the outside. When the tips of each pair of uprights are together and the upper cords are pulled taut in the direction of the pull line, all four uprights should be at right angles to the ground and not perceptibly inclined towards A, nor towards the pull-direction.

Now, from the tops of the uprights C and D, carry the ends of the net down to the ground, and fasten them to the peg B. Each end of the net is thus fastened at the top and bottom of the short uprights, is taut, and does not bag. The spare part of the end-edges of the net is left loose.

Next lay down the four uprights outwards, on the ground, as in Fig. I, and pull the short 'uprights' BC, BD taut in the direction of the pull-line, and drive in the pegs C and D almost flush with the ground. The tops are just sufficiently high out of the ground to keep these short 'uprights' in position. The lines AEC and AFD (Fig. I) are now taut. Next drive in the pegs E and F, which keep the long 'uprights' in position. The lines AEC and AFD should still be taut, a greater strain being on the pegs C and D, and a lesser strain on E and F.

See that the tips of all four 'uprights' are still about 3 in. from the ground, and that the butts in the hollows are slightly below the level of the ground.

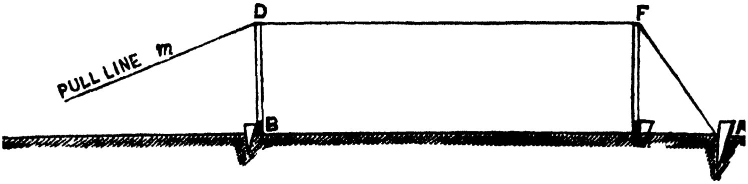
Now take the spare ends of the rope and knot them at *m*. The distance from the peg B to the knot *m*, will be about 3 ft. 6 in. Take care that the knot *m* is in a direct line with the centre of the pegs A and B. The pull-line must be fastened at the point *m* and must be in continuation of the line AB*m*. The *lower* line in the net is drawn tight from A and fastened to peg F, and then carried on and fastened to peg D. In the same manner it is fastened on the other side to E and C.

The lower or finer line in the net is thus, on the right-hand side, drawn tight from A to F and D. The spare *end*-edge of the net should be just about the distance BD which makes the lower line from D to peg B also taut, or almost taut. This line was previously fastened to peg B, and is carried on up the upright to its tip, where it, the lower and finer line, joins the upper and stouter line. The lower line is treated in the same way on the other side.

When properly laid out, the lower line is just under the upper line; both lines are taut, and the net is gathered up close between the two lines

When the pull-line is pulled, both sides of the net should rise up simultaneously; and the puller should keep the pull-line taut, while he walks up towards the net the uprights are thus kept standing (Fig. III) The upper line AFD (Fig. III) should be taut, and the lower line which is fastened to A, and passing on, is fastened to the pegs F and D (Fig. I), is also fastened to the peg B (Fig. III), being then carried along up to the tip of the upright D.

Fig III



The pull-line is of wire and not rope, as the latter stretches With 60 yards of pull-line one man should be able, if the nets are well laid, to pull the nets single-handed. If the nets do not rise readily, reset them , see that the butts of the uprights are lower than their tips, and cut shallow grooves for the butt-ends of the uprights to rest in, so that the butts may be well below the tips, and the tips not more than 3 in. above ground level.

Two small tanks, two or three inches deep, are made within the nets when laid out. These contain live fish as a bait, or, for duck, *gram*. If the herons hesitate about settling within the nets, ten or twelve live fish, about a finger-length in size, are pegged down with a fine skewer. The fish must be just below the surface of the water, and the spike must pass just behind the stomach, for, if it passes through the stomach, the fish will die. The movements of these fish just below the surface of the water will attract the attention of herons from a distance of thirty yards.

To catch a solitary heron, one that has a fixed feeding ground, a bagged heron is useful as a decoy. Its eyes should be 'seeled' and its ears carefully filled with cotton wool; and three or four of the flight-feathers of each wing should be tied together, the ends of the thread being fastened to some of the small feathers under the wings to prevent it slipping down over the ends of the flight-feathers. In this state the decoy-heron will stand quite still within the boundaries of the net, while the wild heron, angry at the intrusion, will settle and attempt to drive it away.

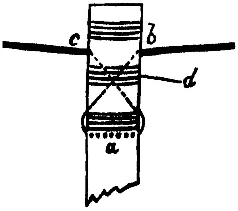
Instead of filling the ears with cotton wool, a long peg may be driven into the ground at an angle of about 15°, and the decoy-heron carefully perched on this. It will, in this position, sit quite still, the eyes of course being seeled as before.

Fish not less than five or six inches long can be gutted and dried in the sun for five or six days, and kept as food for the decoy: before use, these dried fish should be soaked in water. Bird-catchers usually feed their decoy-herons in this way. (Fish keep fresh longer if not placed in water).

Heron-catching in Kashmir

Take thirty to forty black horse-hairs, knot them together at one end, wet them, roll them between the palms to twist them well, and then knot the other ends together. Cut off the ends outside the knots. The length of this horse-hair rope should now be 14½ inches. Take a straight stick of hard wood, of the thickness of a penholder, and eleven inches long; sharpen one end, and make a slit about two inches long in the other end. Now double the horse-hair rope to find the centre, and insert the centre *a* (Fig. IV) in the split, to about one inch from the end of the stick. Above the horse-hair rope, tightly bind the stick with *kachchā sūt* (raw thread), four times. Now take one end of the rope, and cross it over this binding and through the slit, bringing it out at *b* on the opposite side, and pull rather tight. Treat the other end of the rope in the same way. Both ends are now crossed over the binding and stand out at right angles to the stick. Just above the rope make two clove-hitches (that is, four half-hitches) over the top of the stick, with *kachchā sūt*, to keep the rope in its place. Next make four half-hitches (*d*) just below, and cut off the spare thread. Now take one end of the rope and make a loop, *with the knot on the underneath side*, close to the stick. Bring the knot round and over the rope close to the stick, over the opposite side

Fig. IV.



on and fastened to peg D. In the same manner it is fastened on the other side to E and C.

The lower or finer line in the net is thus, on the right-hand side, drawn tight from A to F and D. The spare *end*-edge of the net should be just about the distance BD which makes the lower line from D to peg B also taut, or almost taut. This line was previously fastened to peg B, and is carried on up the upright to its tip, where it, the lower and finer line, joins the upper and stouter line. The lower line is treated in the same way on the other side.

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Fig. III.

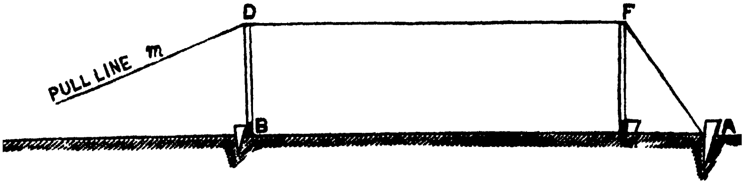

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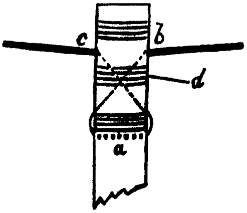
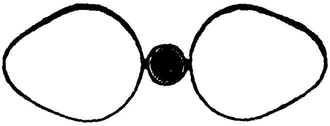
Fig. IV.



of the loop, round it and up again on the inside, and then through the smaller loop thus formed, thus making a thumb-knot. By this means a simple noose is formed by a thumb-knot at what was the loose end, round the standing portion, the knot being on the underneath side when the noose is made. The diameter of the noose is about one-and-a-half inches. Treat the other end in the same manner.

When wetted and adjusted, these (viewed in plan) butterfly nooses (Fig. V), should stand out at right angles to the stick, so that when the stick is planted upright in the water the nooses are parallel to the surface of the water. Make two sets of these nooses, thirty-six uprights with nooses in each set.

Fig. V.



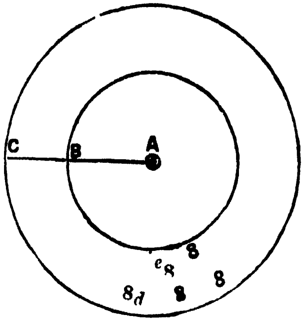
Fasten all the sticks of each set together by twine, the length of twine between two uprights being about eight inches; the twine to be fastened to the sticks at a distance of about four inches from the pointed ends.

To set the nooses.—The depth of the water must be twelve to thirteen inches. In this depth of water drive in a willow stake. Break off its top about one inch above the water and smear the top with mud, so that it may not be conspicuous. With this stake as a centre and radii of fourteen and twenty-four inches, describe two concentric circles. Then dig out the space between the circumferences of the larger and smaller circles to a depth of nine or ten inches, using a wooden spade of which the blade is the exact depth.

Erect one set of nooses along the inside of this trench, and the other set along the outside. When in position, the nooses should be parallel to the top of the water, but on a level with the *natural* bottom, that is, on a level with the top of the trench (or not more than half an inch above this level). The sticks should be about three inches apart when set up. Keep the nooses at, what might vulgarly be called, right angles to the circumference of the circles, and place them chequerwise, the point of *d* noose being half to one inch distant from the outer circumference C, and the point of *e* noose the same distance from the circumference B (Fig. VI).

Now take two fish about five inches long, and with the thumb nail split up the back fin close to the top ray. Take a piece of *kachchā sūt*, and pass a clove-hitch over the top ray of the split fin, down to its base, and, allowing two-and-a-half to three inches of line, tether the two fish, to the willow upright, one on each side, the fish being just below the surface of the water. The herons wading towards the 'fluttering' bait are generally caught by one toe only.

Fig. VI.



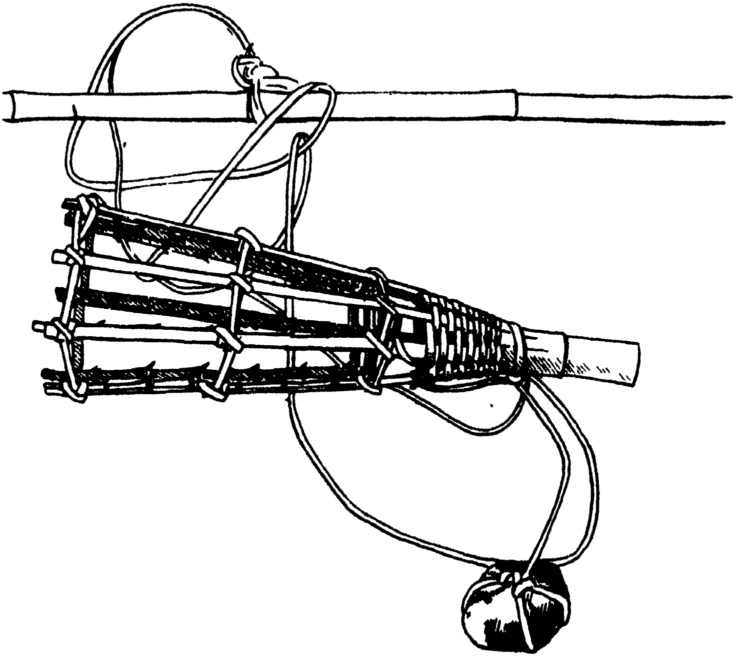
In Kashmir, herons can be so caught in April, when their food is rather scarce; but in June fish are plentiful, and the herons will not take the bait: the shallow water, too, then gets hot and the bait soon dies.

As a decoy, a live heron, its eyes seeled and its flight-feathers tied together, can be tethered to a stake driven into the ground, so that the stake-head is well below the water. The decoy should be picketed at a distance of about eight paces from the nooses.

Perhaps a dead heron acts equally well as a decoy. A stick is run into it, from the vent up through the neck. The stick is fixed into the ground, and the heron's legs are tied to the stick. The wings are also tied to the stick *underneath* the body to make them keep close to the body. The resemblance to a live bird, though not very close, is said to be sufficient to deceive the herons.

49. A Fish Trap from Northern Arakan.

By I. H. BURKILL.



The Chins of Northern Arakan have a way of catching fish which apparently has never been described. They set the trap figured above in a rapid with the mouth down stream, and a bait in the narrow end. The fish caught are hooked and held by the barbs inside.

The traps seen by me are of one size, *viz.*, about 20 inches long and 6 inches across the mouth. They are all made in exactly the same way. A joint of bamboo—the common bamboo of the deserted provision grounds of Northern Arakan—is slit into seven or eight strips to the node and a little bit of basket plaiting done towards the node with a single strip of the same bamboo. Then inside each rib a piece of the barbed rhachis of a *Calamus* or *Dæmonorops* is placed and bound, as the drawing shows, with strips of a different rattan, not with bamboo. Lastly, a bamboo pole is taken and pointed, for fixing into the river-shingle, and a stone is taken for a weight to hold the trap down. With one long doubled piece of rattan the trap, just above the basketwork, is tied to the bamboo, and with a short piece the stone is tied to the base of the trap; but the strips of rattan to the pole pass under the noose of the strip to the stone.

In January last I saw this type of trap fixed in a rapid of the Pi-choung, thirty miles above its junction with the Koladan river, but neglected to obtain specimens. However, after my return to Calcutta two—the one here figured and another—were very kindly placed in the Indian Museum by Major W. R. Stone, Deputy Commissioner of Akyab. The Museum previously possessed no similar traps. Major Stone states that the fish trap is called "We-chun."

50. Magnetic Induction in Spheroids.

By Prof. D. N. Mallik.

The present paper deals with the problem of magnetic induction in a magnetic substance in the form of a prolate spheroid, due to a current circulating in a wire wrapped round it along a part of its length.

1. The first step is to solve the equation $\Delta^2 V=0$ in spheroidal harmonics in the usual way.

For this,

$$\text{let } x=h\sqrt{r^2-1}\ \sin\theta\ \cos\phi$$

$$y=h\sqrt{r^2-1}\ \sin\theta\ \sin\phi$$

$$z=h\ r\ \cos\theta.$$

Then, since
$$\frac{x^2}{h^2(r^2-1)}+\frac{y^2}{h^2(r^2-1)}+\frac{z^2}{h^2r^2}=1,$$

r=constant is a set of confocal prolate spheroids.

Now
$$\frac{ds^2}{h^2}=\frac{r^2-\cos^2\theta}{r^2-1}\ dr^2+(r^2-\cos^2\theta)\ d\theta^2+(r^2-1)\ \sin^2\theta\ d\phi^2$$

∴ transforming $\Delta^2 V$ to r, θ, ϕ, co-ordinates, we have

$$\frac{\delta}{\delta r}\left[\frac{(r^2-\cos^2\theta)\ (r^2-1)\ \sin^2\theta}{r^2-\cos^2\theta}\right]^{\frac{1}{2}}\frac{\delta V}{\delta r}$$

$$+\frac{\delta}{\delta\theta}\left[\frac{(r^2-\cos^2\theta)\ (r^2-1)\sin^2\theta}{(r^2-1)\ (r^2-\cos^2\theta)}\right]^{\frac{1}{2}}\frac{\delta V}{\delta\theta}$$

$$+\frac{\delta}{\delta\phi}\left[\frac{r^2-\cos^2\theta}{r^2-1}\cdot\frac{r^2-\cos^2\theta}{(r^2-1)\ \sin^2\theta}\right]^{\frac{1}{2}}\frac{\delta V}{\delta\phi}=0.$$

or
$$\frac{\delta}{\delta r}\ (r^2-1)\ \frac{\delta V}{\delta r}+\frac{1}{\sin\theta}\ \frac{\delta}{\delta\theta}\left(\sin\theta\ \frac{\delta V}{\delta\theta}\right)+\frac{r^2-\cos^2\theta}{(r^2-1)\ \sin^2\theta}\ \frac{\delta^2 V}{\delta\phi^2}=0.$$

If V is independent of ϕ, we have simply,

$$\frac{\delta}{\delta r}\ (r^2-1)\ \frac{\delta V}{\delta r}+\frac{1}{\sin\theta}\ \frac{\delta}{\delta\theta}\cdot\left(\sin\theta\ \frac{\delta V}{\delta\theta}\right)=0.$$

Putting $V = u_n \, P_n \, (\cos \theta)$, we have, since

$$\frac{1}{\sin \theta} \frac{d}{d\theta}\left(\sin \theta \, \frac{dP_n}{d\theta}\right) + n\,(n+1) P_n = 0,$$

$$u_n, \text{ given by } \frac{d}{dr}\,(r^2-1)\,\frac{du_n}{dr} - n\,(n+1)\,u_n = 0$$

$$\therefore\ u_n = A\ P_n\ (r) + B\ Q_n\ (r), \text{ or}$$

$$V\ = \Sigma A_n\ P_n\ (\cos \theta)\ P_n\ (r)\ +\ B_n\ P_n\ (\cos \theta)\ Q_n\ (r),$$

where P's and Q's are Legendre's functions of the first and second kind.

2. It would be also useful at the stage to expand (distance)$^{-1}$ in these harmonics·

For this we have, writing

$$\rho^2 = x^2 + y^2 + z^2$$
$$= h^2\ (r^2 - \sin^2\theta)$$

$$\Delta^2 = \rho^2 + \rho'^2 - 2\rho\rho'\ [\cos\alpha \cos\alpha' + \sin\alpha \sin\alpha' \cos \overline{\phi - \phi'}\ ]$$

where $\Delta =$ distance between two points (ρ, ρ'),

also, $\rho \cos \alpha = z$

$$\rho \sin \alpha = \sqrt{x^2 + y^2} = h\sqrt{r^2 - 1}\ \sin \theta, \ \&c.$$

$$\therefore\ \Delta^2 = h^2[r^2 - \sin^2\theta + r'^2 - \sin^2\theta' - 2\ rr' \cos\theta \cos\theta'$$
$$-2\ \sqrt{r^2-1}\ \sqrt{r'^2-1}\ \sin\theta \sin\theta' \cos\ (\phi - \phi')].$$

Now putting $\cos\theta = \mu$ &c., and $\cos\ (\phi - \phi') = 1$, for terms independent of ϕ, D, the corresponding value of Δ

$$\frac{D^2}{h^2} = \begin{bmatrix} (r^2-1) + (r'^2-1) + \mu^2 + \mu'^2 - 2rr'\ \mu\mu' \\ -2\sqrt{r^2-1}\ \sqrt{r'^2-1}\ \sqrt{1-\mu^2}\ \sqrt{1-\mu'^2} \end{bmatrix}.$$

In order to expand D^{-1}, put $\gamma' = 1, \mu' = 1$; and if D_0 is the corresponding value of D,

$$\text{we get}\ \ \frac{1}{D_0} = \frac{1}{h(r-\mu)} = \frac{1}{h}\Sigma_0^\infty\ (2n+1)\ P_n\ (\mu)\ Q_n\ (r)$$

$$\therefore\ \text{obviously,}\ \frac{1}{D} = \frac{1}{h}\ \Sigma(2\ n+1)\ P_n\ (\mu)\ \ P_n\ (\mu')\ Q_n\ (r)\ Q_n(r').$$

3. To find the potential due to a circular current at a point P, in *any system* of harmonics.

For this, it will be necessary to prove the following lemma.

4. Lemma. To find the solid angle (ω) subtended by any surface at any point.

Let ds be the element of surface at any point ξ, η, ζ. Let x, y, z, be the co-ordinates of the point at which the solid angle is to be found.

Let ψ = angle between the outward drawn normal at the point and the line joining the two points.

ρ = distance between the points.
dn = element of outward drawn normal

$$\text{Then } \omega = \int \frac{ds}{\rho^2} \cos \psi$$

$$= \int \frac{ds}{\rho^3} \cdot \left[\frac{\delta \xi}{\delta n} (x - \xi) + \quad + \right]$$

$$= \int ds \left[\frac{\delta \xi}{\delta n} \cdot \frac{\delta}{\delta \xi} + \quad + \right] \frac{1}{\rho}$$

$$= \int ds \cdot \frac{d}{dn} \cdot \left(\frac{1}{\rho} \right)$$

5. Ex. To find the solid angle subtended by a circular wire at any point P in zonal harmonics (spherical).

Describe a sphere of radius c with the origin (O) as the centre and having the plane of the given circle as one of its plane sections.

Let the axis of Z be the axis of the zonal harmonics, and α = angle subtended by the radius of the circle at the centre.

Also let ν = angle between any radius (θ, ϕ) and OP ($= r$) and ds, the corresponding element of surface.

$$\text{Then } \omega = \int ds \frac{\delta}{\delta c} \cdot \left(\frac{1}{\nu} \right)$$

$$= \int ds \frac{\delta}{\delta c} \cdot \frac{1}{(c^2 + r^2 - 2rc \cos \nu)^{\frac{1}{2}}}.$$

$$= \int ds \frac{\delta}{\delta c} \cdot \left[\frac{1}{c} \Sigma_0^\infty \left(\frac{r}{c} \right)^n P_n (\cos \nu) \right] \text{ if } r \angle c$$

$$= \int_1^{\cos \alpha} \int_0^{2\pi} d\mu d\phi \, \Sigma (n + 1) \frac{r^n}{c^n} P_n (\cos \nu) \text{ where } \mu = \cos \theta.$$

But $P_n\,(\cos\nu) =$

$$P_n\,(\mu)\;P_n\,(\mu') + \Sigma 2\,\frac{(n-m)\,!}{(n+m)\,!}\;\overset{m}{\underset{n}{T}}(\mu)\;\overset{m}{\underset{n}{T}}(\mu')\cos m\overline{\phi - \phi'}$$

where the T's are Tesseral harmonics.

$$\therefore\quad \omega = 2\pi\int_1^{\cos a} \Sigma\,(n+1)\,\frac{r^n}{c^n}\,P_n\,(\mu)\;P_n\,(\mu')\;d\mu,$$

$$= 2\pi\left[(\cos a - 1) - \Sigma_1^{\infty}\,\frac{1}{n}\,.\,\frac{r^n}{c^n}\,.\left[(1-\mu^2)\frac{dP_n}{d\mu}\right]_1^{\cos a} P_n\,(\mu')\right].$$

Similarly, when r is greater than c.

Obs. It is clear that this method will enable us to find the potential due to a circular current in any system of harmonics, provided we choose the equivalent shell appropriate to these harmonics.

6. To find the solid angle subtended at any point P by a circular wire in spheroidal harmonics (zonal).

Let the axis of the zonal harmonics be the axis of revolution of a spheroid having the plane of the circle as one of its plane sections, and, centre, the origin.

Then $\omega = \int ds\,.\,\frac{d}{dn}\left(\frac{1}{\rho}\right).$

But from the theory of confocals, since $r =$ constant is a series of confocal spheroids we have

$$pdp = cdc \quad (c = \text{ the major axis}),$$
$$= h^2 rdr$$

where p is the perpendicular on the tangent plane at any point from the centre

and $\qquad dp = dn.$

$$\therefore\quad \omega = \int ds\,.\,\frac{p}{h^2 r}\,\frac{\delta}{\delta r}\,.\left(\frac{1}{\rho}\right).$$

But $\qquad \dfrac{1}{\rho} = \dfrac{1}{h}\,\Sigma(2n+1)\;P_n(\mu)\;P_n(\mu')\;Q_n(r)\,.\,Q_n(r'),$

$$+ \text{ terms depending on } \phi$$

where r', μ' refer to the point P.

Also $$\frac{1}{p^2} = \frac{1}{h^2}\left[\frac{\sin^2\theta}{r^2-1} + \frac{\cos^2\theta}{r^2}\right].$$

$$= \frac{1}{h^2(r^2-1)r^2}\cdot(r^2-\cos^2\theta)$$

or $$p = \frac{hr\sqrt{r^2-1}}{\sqrt{r^2-\cos^2\theta}}$$

and $$ds = h^2\sqrt{r^2-\cos^2\theta}.\ \sqrt{r^2-1}.\ \sin\theta\, d\phi\, d\theta$$

$$\therefore\quad \omega = 2\pi\int(r^2-1)\sin\theta\, d\theta\, \Sigma(2n+1)\, P_n(\mu)\, P_n(\mu')\, Q_n(r')\, .\ \frac{dQn}{dr},$$

remembering that ϕ terms disappear on integration between limits 0 and 2π.

Finally, since $\frac{dQ_0}{dr} = -\frac{1}{r^2-1}$.

$$\omega = 2\pi\Big[Q_0(r')\,(\mu-1)$$
$$+\ \Sigma_1^{\infty}\frac{2n+1}{n(n+1)}\, P_n(\mu')\, Q_n(r')\ (r^2-1)\,(1-\mu^2)\,\frac{dP_n}{d\mu}\,.\frac{dQ_n}{dr}\Big].$$

Or, the potential (V) due to a current i, circulating in the wire is

$$= 2\pi i\Big[Q_0(r')\,(\mu-1)\ +$$
$$\Sigma_1^{\infty}\frac{2n+1}{n(+1)}\, P_n(\mu')\, Q_n(r')\ (r^2-1)\ (1-\mu^2)\ \frac{dP_n}{d\mu}.\frac{dQ_n}{dr}\Big].$$

7. To calculate the potential due to several turns of wire, we have to find the mean value of V in the first place.

i.e., calculate $$\frac{\iint Vdcda}{\iint dcda.}$$

$$= \frac{\iint V\frac{\delta(ca)}{d(r\mu)}\, dr\, d\mu}{\iint\frac{\delta(ca)}{\delta(r\mu)}\, drd\mu},$$

where $c =$ distance of any winding of wire from the origin

$= hr\mu$

$a =$ radius of the winding

$= h\sqrt{r^2-1}\ \sqrt{1-\mu^2}$.

8. We shall suppose the meridian section of the coil to be a curvilinear area bounded by confocal ellipses (r = constant) and confocal hyperbolas (θ = constant) so that r and μ may be treated as independent variables.

This will enable us to obtain an approximate solution of the problem of induction in a soft iron rod in the form of a very prolate spheroid, due to a coil of small thickness.

$$\text{Now, } \frac{\delta(ca)}{\delta(r\mu)} = \frac{\delta c}{\delta r}\cdot\frac{\delta a}{\delta\mu} - \frac{\delta c}{\delta\mu}\cdot\frac{\delta a}{\delta r}.$$

$$= -h^2\left[\frac{\sqrt{r^2-1}}{\sqrt{1-\mu^2}} + \frac{\sqrt{1-\mu^2}}{\sqrt{r^2-1}}\right].$$

∴ the potential due to m turns

$$= -\frac{h^2 m}{\iint dc\,da}\cdot \iint V\left[\frac{\sqrt{r^2-1}}{\sqrt{1-\mu^2}} + \frac{\sqrt{1-\mu^2}}{\sqrt{r^2-1}}\right] dr\,d\mu$$

$$= -2\pi\, mi\left[Q_0(r')\left\{1 + \frac{h^2}{a}\iint \mu'\left[\frac{\sqrt{r^2-1}}{\sqrt{1-\mu^2}} + \frac{\sqrt{1-\mu^2}}{\sqrt{r^2-1}}\right]\right\} dr\,d\mu\right.$$

$$+ \Sigma_1^\infty \frac{(2n+1)}{n(n+1)}\cdot\frac{h^2}{a}\cdot P_n(\mu')\, Q_n(r')\iint\frac{dP_n}{d\mu}\cdot\frac{dQ_n}{dr}\left\{(1-\mu^2)^{\frac{3}{2}}\,(r^2-1)^{\frac{1}{2}}\right.$$

$$\left.\left. + (1-\mu^2)^{\frac{1}{2}}(r^2-1)^{\frac{3}{2}}\right\} dr\,d\mu\right]$$

$$= -2\pi mi\left[Q_o(r')\right.$$

$$\left\{1 + \left[\frac{2\mu^2+1}{3}\cosh^{-1} r - r\sqrt{r^2-1}\right]\cdot\frac{h^2}{2a}\sqrt{1-\mu^2}\right\}$$

$$+ \frac{h^2}{a}\Sigma_1^\infty\frac{2n+1}{n(n+1}\cdot P_n(\mu')\, Q_n(r')\int\frac{dP_n}{d\mu}\cdot\frac{dQ_n}{dr}$$

$$\left.\left\{(1-\mu^2)^{\frac{3}{2}}(r^2-1)^{\frac{1}{2}} + (1-\mu^2)^{\frac{1}{2}}(r^2-1)^{\frac{3}{2}}\right\} dr\,d\mu\right],$$

where $a \equiv \int dc\, da$.

$$\text{Now, } \int\frac{dP_n}{d\mu}(1-\mu^2)^{\frac{3}{2}}d\mu = (1-\mu^2)^{\frac{3}{2}}P_n + 3\int\mu\sqrt{1-\mu^2}\,.\,P_n d\mu \quad (1)$$

where P_n stands for $P_n(\mu)$.

But since $(1-\mu^2)\dfrac{dP_n}{d\mu} = nP_{n\;1} - n\mu P_n,$

$$\int \frac{dP_n}{d\mu}(1-\mu^2)^{\frac{3}{2}}\, d\mu = \int nP_{n-1}\ \sqrt{1-\mu^2}\ d\mu$$

$$-\int n\mu\, P_n \sqrt{1-\mu^2}\,.\ d\mu \qquad (2)$$

∴ from (1) and (2), we have,

$$\frac{n+3}{n}\int \frac{dP_n}{d\mu}\,(1-\mu^2)^{\frac{3}{2}}\,d\mu = P_n\,(1-\mu^2)^{\frac{3}{2}}$$

$$+3\int \sqrt{1-\mu^2}\,.\ P_{n-1}\ d\mu \ \ldots\ldots \ \mathrm{A}$$

similarly, $\frac{n+3}{n}\int \frac{dQ_n}{dr}\,(r^2-1)^{\frac{3}{2}}\ d\mu = Q_n\,(r^2-1)^{\frac{3}{2}}$

$$-3\int Q_{n-1}\ \sqrt{r^2-1}\ dr \ \ldots\ldots \ \mathrm{B}$$

$$\frac{n+1}{n}\int \frac{dP_n}{d\mu}\sqrt{1-\mu^2}\,.\ d\mu = P_n\sqrt{1-\mu^2} + \int \frac{P_{n-1}}{\sqrt{1-\mu^2}}\,d\mu \ \ldots\ldots \qquad \mathrm{C}$$

and $\frac{n+1}{n}\int \frac{dQ_n}{dr}\ \sqrt{r^2-1}\ dr = Q_n\ \sqrt{r^2-1} - \int \frac{Q_{n-1}}{\sqrt{r^2-1}}\,dr \ \ldots\ldots \ \mathrm{D}$

Q_n standing for $Q_n\,(r)$.

9. It is, therefore, necessary to evaluate the following integrals :—

(1) $\int P_n\ \sqrt{\mu^2-1}\ d\mu \ \equiv\ {}_1I$ (say)

(2) $\int \frac{P_n}{\sqrt{\mu^2-1}}\,d\mu \qquad \equiv {}_{-1}I_n$,,

(3) $\int \frac{Q_n}{\sqrt{r^2-1}}\ dr$

(4) $\int Q_n\ \sqrt{r^2-1}\ dr$.

$$(1)\quad \int P_n\sqrt{\mu^2-1}\,d\mu = \frac{1}{n(n+1)}\cdot\Big[(\mu^2-1)^{\frac{3}{2}}\,\frac{dP_n}{d\mu}$$

$$-\int \sqrt{\mu^2-1}.\ \frac{dP_n}{d\mu}\,.\,\mu d\mu.\Big]$$

$$= \frac{1}{n(n+1)}\Big[(\mu^2-1)^{\frac{3}{2}}\frac{dP_n}{d\mu}$$

$$-\int\Big(nP_n+\frac{dP_{n-1}}{d\mu}\Big)\sqrt{\mu^2-1}\;.\;d\mu\Big]$$

$$\therefore\ \Big(1+\frac{1}{n+1}\Big)\,{}_1I_n = \frac{1}{n(n+1)}\Big[(\mu^2-1)^{\frac{3}{2}}\frac{dP_n}{d\mu}$$

$$-\int\frac{dP_{n-1}}{d\mu}\,.\,\sqrt{\mu^2-1}\,d\mu\Big]$$

$$= \frac{1}{n(n+1)}\,.\Big[(\mu^2-1)^{\frac{3}{2}}\frac{dP_n}{d\mu}$$

$$-\int[(2n-3)P_{n-2}\ +\ \ +]\sqrt{\mu^2-1}\,d\mu\Big]$$

$$\therefore\ n(n+2)\ {}_1I_n = (\mu^2-1)^{\frac{3}{2}}\frac{dP_n}{d\mu}-(2n-3)\ {}_1I_{n-2}-\ .\ .\ .\ .$$

$$\therefore\ (n-2)n\ {}_1I_{n-2} = (\mu^2-1)^{\frac{3}{2}}\frac{dP_{n-2}}{d\mu}-(2n-7),\ {}_1I_{n-4}-\ .\ .\ .\ .$$

Subtracting, we get,

$$n(n+2)\ {}_1I_n = (\mu^2-1)^{\frac{3}{2}}\Big[\frac{dP_n}{d\mu}-\frac{dP_{n-2}}{d\mu}\Big]$$

$$-\Big\{(2n-3)-n(n-2)\Big\}\,.\ {}_1I_{n-2}$$

$$=(\mu^2-1)^{\frac{3}{2}}\ (2n-1)P_{n-1}\ +(n-3)(n-1)\,{}_1I_{n-2}$$

$$=(\mu^2-1)^{\frac{3}{2}}\Big[(2n-1)P_{n-1}$$

$$+\frac{(n-1)(n-3)}{n(n-2)}\ (2n-5)\ P_{n-3}+\ .\ .\ \Big]$$

$$\therefore\ \int P_n\sqrt{1-\mu^2}\,d\mu = -\frac{(1-\mu^2)^{\frac{3}{2}}}{n(n+2)}\Big[(2n-1)\ P_{n-1}$$

$$+\frac{(n-1)(n-3)}{n(n-2)}\ (2n-5)\ P_{n-3}+\ .\ .\Big]$$

$$=\ {}_1I_n\ \text{say.}$$

$$\therefore\ \frac{n+3}{n}\int\frac{dP_n}{a\mu}\,.\ (1-\mu^2)^{\frac{3}{2}}\ d\mu=(1-u^2)^{\frac{3}{2}}\ P_n+3\ {}_1I_n \qquad \text{from A}$$

$$=\frac{n+3}{n+1}\cdot {}_{3}H_n \text{ say,}$$

and it is to be remembered that ${}_{\iota}I_0 = \int \sqrt{1-\mu^2}\, d\mu$

and ${}_{\iota}I_1 = \int \mu \sqrt{1-\mu^2}\, d\mu$

$$(2) \int \frac{P_n}{\sqrt{\mu^2-1}}\, d\mu = \frac{1}{n(n+1)}\left[(\mu^2-1)^{\frac{1}{2}} \frac{dP_n}{d\mu} + \int \frac{dP_n}{d\mu} \cdot \frac{\mu}{\sqrt{\mu^2-1}}\, d\mu\right].$$

$$= \frac{1}{n(n+1)}\cdot\left[\sqrt{\mu^2-1}\, \frac{dP_n}{d\mu}\right.$$

$$\left. + \int \left(nP_n + \frac{dP_{n-1}}{d\mu}\right) \frac{d\mu}{\sqrt{\mu^2-1}}\right]$$

$$\therefore \left(1 - \frac{1}{n+1}\right) {}_{-1}I_n = \frac{1}{n(n+1)}\cdot\left[\sqrt{\mu^2-1}\, \frac{dP_n}{d\mu}\right.$$

$$\left. + \int (2n-3)\, \frac{P_{n\ 2}}{\sqrt{\mu^2-1}}\, d\mu + + \right]$$

$$\therefore\ n^2\ {}_{-1}I_n = \sqrt{\mu^2-1}\ .\ \frac{d_{-\ n}}{d\mu} + (2n-3)\ {}_{-1}I_{n\ -} + . + . .$$

$$\therefore\ (n-2)^2\ {}_{-1}I_{n-2} = \sqrt{\mu^2-1}\ .\ \frac{dP_{n\ 2}}{d\mu} + (2n-7)\ {}_{-1}I_{n-4} + \ . . .$$

∴ subtracting,

$$n^2\ {}_{-1}I_n = \sqrt{\mu^2-1}\ .\ (2n-1)\ P_{n-1} + (n-1)^2\ {}_{-1}I_{n-2}$$

$$= \sqrt{\mu^2-1}\ .\ \left\{(2n-1)\ P_{n-1}\right.$$

$$\left. + \frac{(n-1)^2}{(n-2)^2}\ (2n-5)\ P_{n-3} + \ . .\ \right\}.$$

$$\therefore\ n^2 \int \frac{\Gamma_n}{\sqrt{1-\mu^2}}\, d\mu = -n^2\ \iota\ \ {}_{-1}I_n$$

$$= -\sqrt{1-\mu^2} \left\{(2n-1)\, P_{n-1} + \ . .\right\}$$

$$= n^2\ {}_{-0}I_n \text{ (say)}$$

$$\therefore\ \frac{n+1}{n} \int \frac{dP_n}{d\mu}\ \sqrt{1-\mu^2}\, d\mu = P_n \sqrt{1-\mu^2} + \int \frac{P_{n-1}}{\sqrt{1-\mu^2}}\, d\mu \quad \text{from } C$$

$$= P_n \sqrt{1-\mu^2} + {}_{-1}I_{n-1}$$

$$= {}_1 II_n \text{ (say)},$$

where ${}_{-1}I_0 = \int \frac{d\mu}{\sqrt{1-\mu^2}}$. and ${}_{-1}I_1 = \int \frac{\mu d\mu}{\sqrt{1-\mu^2}}$.

$$(3) \int \frac{Q_n}{\sqrt{r^2-1}} dr = \tfrac{1}{2} \int \frac{P_n}{\sqrt{r^2-1}} \log \frac{r+1}{r-1} dr$$

$$- \int \left[\frac{2n-1}{1\,.\,n} \,.\, P_{n-1} + \,.\,.\, \right] \frac{dr}{\sqrt{r^2-1}}$$

$$= \tfrac{1}{2}\, {}_{-1}I_n \log \frac{r+1}{r-1} + \int \frac{{}_{-1}I_n}{r^2-1} dr$$

$$- \left[\frac{2n-1}{1\,.\,n}\, {}_{-1}I_{n-1} + \quad + \right].$$

$$= \tfrac{1}{2}\, {}_{-1}I_n \log \frac{r+1}{r-1}$$

$$+ \frac{1}{n^2} \int \frac{dr}{\sqrt{r^2-1}} \left\{ (2n-1)\ P_{n\ 1} + \frac{(n-1)^2}{(n-2)^2} (2n-5)\, P_{n-3} + \ .\ . \right\}$$

$$- \left[\frac{2n-1}{1\,.\,n}\, {}_{-1}I_{n-1} + \quad + \right]$$

$$= \tfrac{1}{2}\, {}_{-1}I_n \log \frac{r+1}{r-1} + \frac{1}{n^2} \left[(2n-1)\, {}_{-1}I_{n-1} + \quad + \right]$$

$$- \left[\frac{2n-1}{1\,.\,n}\, {}_{-1}I_{n-1} + \quad + \right],$$

(where the argument of the P's and I's is r and not μ).

$$\left(1 + \frac{1}{n}\right) \int \frac{dQ_n}{dr} \sqrt{r^2-1}\, dr$$

$$= Q_n \sqrt{r^2-1} - \int \frac{Q_{n-1}}{\sqrt{r^2-1}}\, d \qquad \text{from (B)}$$

$$= Q_n \sqrt{r^2-1} - \left[\tfrac{1}{2}\, {}_{-1}I_{n-1} \log \frac{r+1}{r-1} \right.$$

$$\left. + \frac{1}{(n-1)^2} \left\{ (2n-3)\, {}_{-1}I_{n-2} + \,.\, \right\} \right.$$

$$-\left\{\frac{2n-3}{1.(n-1)}\,{}_{-1}I_{n-2}+\ldots\right\}\Bigg]$$

$$\equiv {}_1X_n \text{ (say)},$$

In the particular case of $n=1$,

$$2\int\frac{dQ_1}{dr}\sqrt{r^2-1}\;dr = Q_1\sqrt{r^2-1}-\int\frac{Q_0}{\sqrt{r^2-1}}\,dr$$

$$=Q_1\sqrt{r^2-1}-\tfrac{1}{2}\int\log\frac{r+1}{r-1}\cdot\frac{dr}{\sqrt{r^2-1}}.$$

$$=Q_1\sqrt{r^2-1}+\tfrac{1}{2}\left[\frac{A_2}{r}+\frac{3A_4}{r^3}+.\right],$$

where $\qquad (2n-1)\;A_{2n}=2\left[p_{n-2}+\dfrac{2n-2}{2n-3}\,p_{n-4}+\;..\right].$

and $\qquad (1-x^2)^{-\frac{1}{2}}=1+p_2x^2+p_4x^4+\;\ldots.$

Similarly, $\displaystyle\int Q_n\sqrt{r^2-1}\;dr=\tfrac{1}{2}\int P_n\log\frac{r+1}{r-1}\sqrt{r^2-1}\;dr$

$$-\int\left[\frac{2n-1}{1.n}\,P_{n\;1}+\;..\right]\sqrt{r^2-1}\;dr$$

$$=\tfrac{1}{2}\,{}_1I_n\log\frac{r+1}{r-1}+\frac{1}{n(n+2)}\Big[(2n-1)\,{}_1I_{n-1}+\;..\Big]$$

$$-\left[\frac{2n-1}{1.n}\cdot{}_1I_{n-1}+\;..\right]$$

and $\qquad \displaystyle\left(1+\frac{3}{n}\right)\int\frac{dQ_n}{dr}\,(r^2-1)^{\frac{3}{2}}\;dr$

$$=Q_n\,(r^2-1)^{\frac{3}{2}}-3\Bigg[\tfrac{1}{2}\,{}_1I_{n-1}\log\frac{r+1}{r-1}$$

$$+\frac{1}{(n-1)(n+1)}\Big\{(2n-3)\,{}_1I_{n-2}+\quad+\Big\}$$

$$-\left\{\frac{2n-3}{1.(n-1)}\,{}_1I_{n-2}+\;..\right\}\Bigg]\equiv\frac{n+3}{n+1}\cdot{}_3X_n \text{ (say)},$$

Moreover, $\qquad \displaystyle\int Q_0\sqrt{r^2-1}\;dr+\tfrac{1}{2}\int\frac{Q_0}{\sqrt{r^2-1}}\,dr$

$$=\tfrac{1}{4}\,r\,\sqrt{r^2-1}\,\log\frac{r+1}{r-1}+\tfrac{1}{2}\sqrt{r^2-1}.$$

We have also $\displaystyle\int dr\,da=-h^2\int\left[\frac{\sqrt{1-\mu^2}}{\sqrt{r^2-1}}+\frac{\sqrt{r^2-1}}{\sqrt{1-\mu^2}}\right]dr\,d\mu$

$$=-\frac{h^2}{2}\left[\mu\,\sqrt{1-\mu^2}\,\cosh^{-1}r.\right.$$

$$\left.+\;r\sqrt{r^2-1}\,\sin^{-1}\mu\right].$$

between limits.

10. The potential, therefore, becomes

$$-2\pi\,mi\left[\;Q_0\,(r')\;\left\{\;1\;+\left[\frac{1+2\mu^2}{3}\;\cosh^{-1}r\right.\right.\right.$$

$$\left.\left.-r\sqrt{r^2-1}\right]\;\frac{\sqrt{1-\mu^2}}{2a}h^2\;\right\}$$

$$\left.+\;h^2\,\Sigma_1^\infty\;\frac{2n+1}{(n+1)^2}\;\frac{P_n(\mu')\;\;Q_n(r')}{a}\;\left\{\;{}_1X_n\;{}_2II_n\;+\;{}_1II_n\;{}_3X_n\;\right\}\;\right]$$

taken between limits.

11. Calling this V and changing r' into r and μ' into μ and *vice versa*

let $\quad V=C_0\;Q_0(r)+C_1\;P_1(\mu)\,.\;Q_1(r)+\;.\;.\;+$

$\quad V_1=A_0+A_1\;P_1(\mu).\;\;P_1(r)+A_2\;P_2(\mu)\;\;P_2(r)+\;\;.$

and $\quad V_2=B_0\;Q_0(r)+B_1\;P_1(\mu)\;Q_1(r)+\quad+\;.$

where $\quad V_1$ and V_2 are the potentials inside and outside, respectively.

Then, since $V_1=V_2$ at $r=R=\dfrac{1}{e}$, where e is the eccentricity of the spheroid,

$$A_0=B_0\;Q_0(R)$$

$$A_1\;P_1(R)=B_1\;Q_1(R)$$

$$A_2\;P_2(R)=B_2\;Q_2(R),\ \&c.$$

Again from the equation of the flux,

$$-\,(1+4\pi k)\;\frac{\delta V}{\delta n}+\frac{\delta V_2}{\delta n}-4\pi k\;\frac{\delta V}{\delta n}=0$$

but since $dn = \dfrac{h^2 r\,dr}{p}$,

we have

$$-(1+4\pi k)\,\frac{\delta V_1}{\delta r}+\frac{\delta V_2}{\delta r}-4\pi k\,\frac{\delta V}{\delta r}=0.$$

12. From these, the constants can be determined, *viz.*

$$B_0=-4\pi k\;C_0=\frac{A_0}{Q_0(R)}$$

$$-A_n\,(1+4\pi k)\,\frac{dP_n}{dR}+(B_n-4\pi k\;C^n)\,\frac{dQ_n}{dR}=0,$$

or $$A_n\left\{\frac{P_n(R)}{Q_n(R)}\cdot\frac{dQ_n}{dR}-(1+4\pi k)\,\frac{dP_n}{dR}\right\}=4\pi k\;C_n\,\frac{dQ_n}{dR}$$

since $$A_n\,P_n(R)=B_n\,Q_n(R).$$

13. In particular, $A_0=-2\pi k\;C_0\log\left(\dfrac{1+e}{1-e}\right)$,

and $$C_0=-2\pi mi\left\{1+h^2\left[\frac{1+2\mu'^2}{3}\cosh^{-1}r' - r'\sqrt{r'^2-1}\right]\frac{\sqrt{1-\mu'^2}}{2a}\right\},$$

taken between limits.

In order to simplify this, we shall assume that the wire is wrapped round half the spheroid. This amounts to taking μ between the limits 1 and 0.

In this case, $$a=\frac{\pi}{4}\,(a_1c_1-ac)$$

and $$C_0=-2\pi mi\left[1+\frac{h^2}{6a}\log\frac{c_1+a_1}{c+a}-\frac{2}{\pi}\right],$$

where a_1, c_1, are axes of the outer confocal.

If λ be the total thickness of the layers of wire,

since $a_1=a+\lambda$, $\quad c_1=c\sqrt{1+\dfrac{a_1^2-a^2}{c^2}}$

$$=c\left(1+\frac{a\lambda}{c^2}\right)\text{ nearly}$$

$$\therefore\quad\log\frac{c_1+a_1}{c+a}=\log\left(1+\frac{\lambda}{c}\right).$$

and $a_1 c_1 - ac = c\lambda\left(1 + \frac{a^2}{c^2}\right).$

$$\therefore \quad C_0 = -2\pi mi\left[1 + \frac{2e^2c}{3\pi\lambda\left(1+\frac{a^2}{c^2}\right)}\log\left(1+\frac{\lambda}{c}\right) - \frac{2}{\pi}\right] \text{ nearly.}$$

14. If now M be the magnetic induction at any point of the surface,

$$M = (1+4\pi k)\,\frac{\delta(V+V_1)}{\delta n}.$$

$$= \frac{(1+4\pi k)p}{h^2R}\left\{C_0\frac{dQ_0}{\delta R} + \sum_1^\infty\left(C_n\frac{dQ_n}{dR} + A_n\frac{dP_n}{dR}\right)P_n(\mu)\right\}$$

$$= \frac{(1+4\pi k)\,p}{h^2R}\left[C_0\frac{dQ_0}{dR} + \Sigma C_n\frac{dQ_n}{dR}\left\{1 + \frac{4\pi k\,\frac{dP_n}{dR}}{\frac{P_n(R)}{Q_n(R)}\frac{dQ_n}{dR} - (1+4\pi k)\frac{dP_n}{dR}}\right\}P_n(\mu)\right],$$

$$= \frac{(1+4\pi k)\,p}{h^2R}\left[C_0\frac{dQ_0}{dR} + \Sigma C_n\frac{dQ_n}{dR}\cdot\frac{\left(P_n\frac{dQ_n}{dR} - Q_n\frac{dP_n}{dR}\right)P_n(\mu)}{P_n\frac{dQ_n}{dR} - Q_n\frac{dP_n}{dR}(1+4\pi k)}.\right]$$

But $Q_n(r) = \frac{1}{2}P_n\log\frac{r+1}{r-1} - \frac{2n-1}{1\,.\,n}P_{n-1} - \ldots$

$$\therefore \frac{dQ_n}{dr} = \frac{1}{2}\frac{dP_n}{dr}\,.\log\frac{r+1}{r-1} - \frac{P_n}{r^2-1} - \left[\frac{2n-1}{1\ \ n}\cdot\frac{dP_{n-1}}{dr} + \ +\right]$$

$$\therefore P_n\frac{dQ_n}{dr} - Q_n\frac{dP_n}{dr} = -\frac{P_n^2}{r^2-1} - \left[\frac{2n-1}{1\,.\,n}\left(P_n\frac{dP_{n-1}}{dr} - P_{n-1}\frac{dP_n}{dr}\right) + \ldots\right.$$

$\therefore$ when $r = R = 1$, very nearly, the left-hand side is $=$ a very large negative quantity $= -\frac{1}{R^2-1}$ very nearly,

and $\therefore$ $Q_n\frac{dP_n}{dR}$ is large compared with $\frac{dQ_n}{dR}$.

Also $$\begin{aligned} M = \frac{p\,(1+4\pi k)}{h^2 R\,(R^2-1)} \Bigg[& -C_0 \\ & + \Sigma\, C_n \frac{\dfrac{dQ}{dR}\,.\,P_n(\mu)}{\dfrac{1}{R^2-1} + 4\pi k\; Q^n\,(R)\,\dfrac{dP_n}{dR}} \Bigg] \text{ very nearly.} \end{aligned}$$

Moreover, it can be proved, as is *a priori* evident, that C_1, C_2, &c., are of decreasing magnitudes.

As a first approximation, therefore, we may reject all but the first term, and we have

$$M = -\frac{ep\,(1+4\pi k)}{a^3}\,C_0$$

$$= \frac{pe}{a^3}\,(1+4\pi k)\;2\pi m i \left[1 + \frac{2e^2 c \log\left(1+\frac{\lambda}{c}\right.}{3\pi\lambda\left(1+\frac{a^2}{c^2}\right)} - \frac{2}{\pi} \right].$$

51. Notes on Clay Tablets from the Malay Peninsula.

By RAKHALDAS BANERJI.

With an Introductory Note

by N. ANNANDALE, *Officiating Superintendent, Indian Museum.*

INTRODUCTORY NOTE.

In the ethnology of the Malay Peninsula no problem is more difficult to unravel than that of the date or dates and the place or places of origin of the many Indian factors in the arts and legends of the Malays and of the Siamese of the northern states. The difficulty of attacking the problem is increased by the vagueness of the idea implied in the term Indian, and it will perhaps clear away misapprehension if I point out that it is not intended that this term should have a restricted meaning, for by "Indian factors" all that is meant is factors derived from peninsular India. Influences so derived are obviously of very diverse kinds so far as the Malays[1] have been concerned, for these people have been indebted to India not only for the Buddhistic and Hindu beliefs which they still retain unwittingly, but also in large measure for the religion of Islam,[2] which they all profess. The Siamese of the Malay States are Buddhists much in the same way as the Malays are Muhammadans, but in their legends and incantations, just as in those of the Malays, references to members of the Hindu pantheon, especially to Ráma and Hanumán, abound, side by side with invocations and threats to or against local spirits and demons such as people the mythology of all primitive races.

It has often been assumed that the Indian invasion of Malaya, which was in all probability a peaceful one, started from Southern India, and the fact of long-continued intercourse between the Madras coast and the western ports of the peninsula cannot be doubted. As I have pointed out elsewhere,[3] this intercourse still persists, very little changed directly by European influences. There are many similarities[4] between the Muhammadanism of the "Labbies" of the Indian shore of the Gulf of Manaar and that of the Malays, and I think that it would not be impossible to find striking parallels between the objects in daily use, and especially the patterns with which these objects are adorned, among the two races; but this is a wide question which I cannot discuss at present. The fact, however, that Ráma and Hanumán play an important part in the folklore of the Malay Peninsula both among Muhammadans and among Buddhists is perhaps worthy of note in connection with the legends which link these demigods with the Gulf of Manaar and especially with the region round Adam's Bridge; for it is from this region that a large proportion of the "Klings" now permanently or temporarily resident in Malaya, have come. I would even hazard a suggestion that it is largely owing to the commercial activity of the "Labbies" and their ancestors that the Malays of the mainland were first converted from pure Shamanism to Hinduism, and then from Hinduism to what they call, in phraseology of curiously mingled derivation, the *agáma Islam.*

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[1] See Annandale, *Fasciculi Malayenses*, Anthrop. I, p. 91, Liverpool, 1903, and Newbold, *Political and Statistical Account of the British Settlements in the Straits of Malacca*, Vol. II, p. 193, London, 1839.

[2] Crawford's *Indian Archipelago*, Vol. II, p. 260 He mentions the "longer and more intimate intercourse" with the Arabs and the Mahomedans of the eastern coast of India.

[3] *Memoirs of the Asiatic Society of Bengal*, Vol. I, Suppl., p. ii.

[4] *e g.* as regards the *'Aqīqah* ceremony (see Stapleton, *Mem. Asiatic Soc. Bengal*, I, p. 32, 1905).

In making this suggestion, I do not lose sight of the fact that certain of the Indian elements of Hindu origin found in the ethnography of the peninsular Malays have probably been derived from Southern India by way of Java. The colossal ruins of that island form a document in the study of Indian influence outside India far more definite and satisfactory than any now to be found in Malaya, and there can be very little doubt that the Javanese[1] have played an important part in the history of the arts, if not of the politics, of the Malay Peninsula.

It has been thought by some that the Hindu elements in Malay ethnography were probably derived from intercourse with Buddhists. Many of these elements are of so general a nature that either of the two religions might have fostered them, and further, it is probable that the Buddhism which influenced Malaya was of a type which had relapsed a considerable part of the way to Brahminism. Therefore, it has been held, even direct references to essentially Hindu deities may have been taught by Buddhists to the ancestors of the Malays. There seems to be no positive evidence, however, that the southern part of the Malay Peninsula, in which part only Malays and aboriginal tribes lived until comparatively recent days, was ever a Buddhist country. This is the part of the peninsula which is nearest to Java and in which legends referring to the Javanese are most prevalent, and there can be no doubt that Indian Hindus visited Java at an earlier date than Indian Buddhists. At any rate in the northern part of the peninsula, every ruin of unknown origin is popularly assigned to the Siamese,[2] and the Siamesè claim, probably because of mistaken ideas,[3] even to have occupied the island of Singapore at the extreme southern point. The term Siamese among the Malays is synonymous with Buddhist, and at any rate in Perak and the Patani States *orang Siam* generally means no more than a professor of Buddhism. Very little reliance can be placed on legends referring to the Siamese, as their name would seem to have been applied to any northern race who were not Chinamen and whose skins were not very dark; very dark people would probably have been called *orang Kling*, whatever their religion might have been. The phrase *orang Kling Islam* (*i.e.*, a Muhammadan from Madras) is quite legitimate, at any rate in Patani Malay. Moreover, although it is very doubtful whether the Siamese, who are a comparatively recent nation, ever occupied any part of the peninsula south of the states of Senggora and Trang at all permanently, there is no doubt that in the seventeenth, eighteenth and nineteenth centuries, if not earlier, they were in the habit of making hasty southward raids which struck terror into the Malays and became a fruitful source of legend—and this although the practical effect of the raids was small. Evanescent legends arising from sudden catastrophes of the kind are always liable to be antedated and to confuse events of comparatively recent times with others long antecedent to them and differing from them widely even in essential facts.

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[1] See Juynboll on the shadow-play in *Bijdr. Taal- Land- Volkenkunde Ned. Ind.*, 1902, pp 541-545.

[2] Cf. Blagden in *Journ Roy. Asiat. Soc.*, 1906, p. 115

[3] But see Gerini, who takes a different view, in *Journ. Roy. Asiat. Soc.*, 1905, p 493

In the Straits Settlements, Johore and the Federated Malay States, Buddhism does not now exist except among recent immigrants. In Kelantan and Trenganu its position is precarious, the great majority of the population professing Muhammadanism, which gradually becomes less and less predominant towards the north. North of Kedah on the west coast of the peninsula and of Patani on the east, however, Buddhism is not only the religion of the majority but even appears to be gaining a firmer hold upon the people as the political influence of Siam increases. This Buddhism is of the modern Siamese type (which has characteristics of its own) and is possibly of recent growth; there is considerable evidence to show that it has not originated from direct intercourse with India. In the State of Trang, from which came the tablets described in the present paper, practically the whole of the inland population consists of "Siamese" (*i.e.*, Buddhists) and Chinamen, while the "sea-folk" of the coast are partly "Malays" (Muhammadans) and partly "Kaffirs" (pagans). The images found in the temples attached to the Siamese monasteries are of the somewhat peculiar type best if somewhat loosely described as "Indo-Chinese," differing greatly from the Indian tablets found in caves but agreeing with the figures made by other Buddhists in the peninsula. Babu Rakhal Das Bannerjee has described the Indian figures in detail, and I need not attempt to point out the points which stamp them as Indian.

In the Patani States and elsewhere on the east side of the main range which forms the backbone of the Malay Peninsula, tablets of another type, to one of which Babu Rakhal Das Bannerjee refers at the end of his paper, are found in large numbers. I have seen them by the hundred in the Siamese state of Jalor, and apparently they are just as common in those parts of Pahang in which there are suitable sites for the cave-temples of which the

Siamese are so fond. There is a tradition among educated Siamese that these tablets were placed in their present position in the caves by the armies which raided the peninsula in the sixteenth and seventeenth centuries, and there is nothing improbable in this tradition. It is quite evident that these tablets are much more modern than those from Trang, although both are popularly believed to be the work of spirits, no tradition persisting among the peasantry as to their true origin.

In connection with the Trang tablets I should mention the peculiar people known in Siam as Kong Phram or Pram, a phrase which is usually translated "Brahmins." These people have their headquarters in the State of Lakon or Nakawn Sitamarat, which lies east and a little north of Trang; but some of them are also found in Bangkok and in other parts of Siam. Although the Phram are Buddhists they are treated with great reverence and apparently regarded as a sacred caste. They have, moreover, certain peculiar customs; for instance, they do not burn their dead as the majority of the Siamese do in normal circumstances, but bury them in a kneeling or squatting attitude. Not the least interesting fact ascertained regarding them is their possession of books of legend and ritual written in some Sanscritic language other than Pali. Copies of the books were obtained in 1899 by Mr. W. W. Skeat,[1] who tells me that he hopes to make arrangements regarding their publication. Until this is done it will be impossible to say whether there is any real connection between the tablets found in caves in Trang (in which state it is commonly believed that there were formerly a few of the Phram) and this mysterious people. Mr. A. Steffen (*Man*, 1902, No. 25) states that several tribes of Phram are said to have come to Lower Siam from "Wanilara" in the eighth century A.D., giving as his evidence a somewhat vague reference to palm-leaf MSS. I understand that his information was derived from a vernacular periodical published in Siam for the preservation of historical information contained in the libraries of those monasteries whose MSS. were not destroyed in the Burmese invasion at the end of the eighteenth century, in which the royal archives at Ayuthia were burned.

The history of the Malay Peninsula, as will be clear from what has been already said, is a most obscure subject. It was only after the coming of the Portuguese at the beginning of the sixteenth century A.D. that authentic records began to be kept; every event before that date is problematical and can only be discerned dimly and without the satisfaction of a date. Such relics as the ones described in Babu Rakhal Das Bannerjee's paper are indications rather than statements of what occurred; but even so they are of great interest in the study not only of Malayan but also of Indian history. We in India are perhaps too apt to regard everything Indian, be it a date, an object of art or worship, a race, a stone, or an animal, as only of Indian importance. Historians in India have paid some attention to events in the out world-side that have affected India, but comparatively little notice has been taken of the manner in which India has influenced the world outside. The influence of Indian thought in Tibet has lately been dealt with by several members of this Society, and even the fate of Indian philosophy in Japan has been discussed; but except for a paper by one who is not a member of the Society and does not reside in India, our recent publications contain few references to the islands of the "Indian" Archipelago, which forms, together with the Malay Peninsula, an ethnological region profoundly influenced by thoughts and arts which had their origin in the peninsula of Hindustan.

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[1] See Skeat, *Report British Assoc.*, 1900, p. 393; also in *Man*, 1902, No. 126.

To return to the narrower question of the tablets with which this paper deals more directly; I should say that the tablets were found in the floor of caves which were apparently at one time used as Buddhist temples. At least two such caves have been found in the state of Trang. Mr. A. Steffen has described the sites in detail in *Man*, 1902, No. 125.

N. ANNANDALE.

DESCRIPTION OF THE TABLETS.

The five tablets which are described in the following pages were shewn to me by Dr. Annandale about three months ago. They have since been presented by him to the Indian Museum. They were discovered on the eastern side of the Malay Peninsula. The five tablets are of various sizes, oval in shape, with a pointed top, and bear impressions both on the obverse and the reverse. They are of baked clay. Though they come from the Malay Peninsula, they are decidedly Indian. Tablets of clay have been discovered in large numbers in India proper and fall into two classes. The first class, known as "civic," has received scant notice until a recent period when Dr. Bloch's discovery of a large number of them on the site of the ancient Vaisali gave a considerable impetus to its study. The second class is known as "votive." The tablets under discussion belong to the latter class. Pilgrims when visiting holy places usually dedicate some object near the principal shrines. In this way the vast number of temples in Hindu and Buddhist Benares have grown up, and the large mound near the Mahābodhi Temple has accumulated. The offering may be anything from a huge temple of stone or brick to clay representations of them, a few inches in length. These votive tablets or seals were placed singly or one over the other, thus indicating that the donor had come on pilgrimage alone or accompanied by his wife. When the whole family went on pilgrimage together they placed their votive seals in an earthen vessel. Such vessels full of seals have been found in large numbers at Bodh-Gaya, and some perfectly preserved specimens can now be seen in the Museum Gallery.[1] These votive seals usually bear impressions on one side only which consist either of a Buddha or some other deity of the Mahāyānist Buddhist Pantheon or a Chaitya accompanied by the Buddhist formula "Ye Dhammā hetu, etc.," or some other suitable quotation from the Buddhist Scriptures. I gather from Dr. Annandale that such votive seals are numerous in the Far East. When I saw these seals for the first time, I thought that they had been obtained from some part of India proper, so Dr. Annandale's statement that they came from the Malay Peninsula came to me as a surprise. These seals possess three well-marked characteristics for which they should hold a promiment place in the study of Indian antiquity and history, as Dr. Annandale has already pointed out, we have paid more attention to the outside influences which have affected India than to that sphere out of India where India has up to date exercised a preponderant influence. The three characteristics are:—

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[1] Anderson's Catalogue and Handbook of the Archæological Collections in the Indian Museum, Part II, p. 63 B. G., 192-200.

(1) The human figures on the seals are decidedly Indian, as a glance at the accompanying photograph will show. The human representations on them offer a contrast when compared with those on the seals from Burma and other places in the Far East.[1] On the other hand they compare favourably with the Northern Indian Buddhist sculptures. If we compare the largest of these five seals with one of the sculptures from Sarnath now in the Indian Musuem, we find that they resemble to a considerable extent both in execution and in the seal. The branching lotus-stalks and the figures on them are undoubtedly similar.[2]

(2) All of these seals bear inscriptions and their characters form the second of the three characteristics. The characters of these seals are Indian. They are Northern Indian Nāgarī characters of the 11th century A.D. Some seals bearing inscriptions in Northern Indian characters were sent to Dr. Kern of Leyden by Mr. C. O. Blagden, who has described them recently.[3] But Dr. Annandale informs me that these seals do not bear any human representation or symbol on them. Dr. Kern has not specified to which group of northern characters they belong. Mr. Vikrama Singh, of the Oxford Institute, has already noticed that the characters on these seals are Northern Indian. On a closer examination I find that they resemble the characters of the Benares grant of Karṇadeva and those of the grants of the Rathors of Kanauj. Roughly speaking they belong to the western group of the Nāgarī of the 11th Century A.D. as distinguished from the eastern group of the Nāgarī of the same century as found on the Deopārā inscription of Vijaya Sena of Bengal. The presence of these seals thus becomes of much importance in the study of the history of India. Their presence can be accounted for in two ways:—

(*a*) That there was a colony of Northern Indians in the Malay Peninsula.

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[1] Anderson's Catalogue, Part II, p. 173-4 "Terra Cotta Medallions" from Rangoon.

[2] Anderson's Catalogue, Part II, p. S. 5.

[3] Journal of the Royal Asiatic Society (Straits Branch) 1903, p. 205

(*b*) Or that these seals or their moulds were carried by Buddhist pilgrims from India as souvenirs or relics. Dr. Annandale's remarks on the mysterious Prams, and their sacred books in a Sanskritic language lead me to believe the first to be the most probable cause.

(3) As will be shown later on, the deities represented on these seals belong to the Mahāyāna School. It is of interest to note that while the Buddhism prevalent in Burma is of the Hināyāna School, the relics of Malay-Asia are those of the Mahāyāna School. The researches of Messieurs Barth, Senart and Kern have proved that Cambodia and Java received its Buddhism from Northern India, and now it seems that Malay also received its religion from Northern India. It may be noted in this connection that all inscriptions hitherto discovered in the Malay Peninsula are in characters which belong to the southern variety of Indian characters, while those on these seals belong to the western variety of Northern Indian Nāgari of the 11th century A.D., so even among Far-eastern antiquities they occupy an unique position.

Out of these five seals the largest is in a state of imperfect preservation (see plate). Fortunately duplicates of these are preserved in the Oxford University Museum and have been published by Messrs. Steffen and Annandale.[1] This seal measures 4½ inches by 3½ inches and is oval in shape. It bears a large impression on the obverse and five small impressions on the reverse. The impression on the obverse is pear-shaped and represents a Buddha seated on a lotus throne inside a shrine in the centre. Similar shrines are to be found on the sides of the votive stupa from Magadha.[2] Such shrines have also been found on seals from Bodh-Gaya, and some well-preserved specimens are in the Indian Museum.[3] The hands of the Buddha inside this shrine are in the *Dharmacakra Mudrā* or in the attitude of teaching or delivering a sermon. The shrine itself is supported by a larger lotus. On each side of the shrine there is a small votive stupa. Below the lotus, which supports the shrine, there is an inscription in four or five irregular lines in the Nāgari of the 11th century A.D. It consists simply of the Buddhist votive formula "Ye Dharmā, etc." Surrounding this central shrine there are eight other figures each seated on a lotus and with a halo around their heads indicating their divine nature. It is to be observed that the human figures on this seal are arranged along three vertical lines, having three figures to each line. The figures in the central line are sitting cross-legged (*Vajraparyaṅka Niṣaṇṇaḥ*) while those in the first and third line are squatting on their haunches. I fully believe that these attendant figures each represent a Bodhisattva of the Mahāyānist Tāntrika-Pantheon on which so much light has been thrown by the researches of M. Foucher. But even with the aid of M. Foucher's works I have been able to identify only one of these attendant figures, and so I shall be obliged to describe the other figures simply. The hands of these figures are in different positions and they are seated in different postures. It is impossible to identify any of these attitudes with any particular *mudrā* since they have not been met with elsewhere.

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[1] Man, 1902, No. 125, p. 178, pl. M. Dr. Annandale obtained some seals for the Oxford University Museum from Mr. Steffen, out of which these five duplicates were returned to him.

[2] Annual Report of the Archæological Survey of India, 1903-4, p. 220, Fig. 2.

[3] Anderson's Catalogue, Part II, pp 60-61. Cunningham's Mahābodhi, p. 51, pl. xxiv

There is a single figure on the top of the shrine. It is seated on a full-blown lotus and on its breast there is a garland or necklace. On each side of the halo there is a small votive stupa supported on a miniature full-blown lotus. On each side of the arch of the shrine there is a figure seated also on a lotus. Near the left arm of the right-hand side figure occurs the Nāgari letter *ye*, and near the upraised right-hand of the left-hand side figure the word *Dharmā* also in Nāgari. Below this on each side of the shrine there is a similar figure. Just below the inscription under the large lotus there is a single figure, on each side of which there is, in a position similar to those on the sides of the arch of the shrine, a figure also seated on a lotus. Out of these eight attendant figures I have been able to identify only one, which is just below the inscription under the large lotus. In the seal before me this figure has been much injured. But the duplicate in the Oxford University Museum is in a better state of preservation, and I describe the figure from the plate published in the *Man.* The figure has only two arms. The right hand is stretched forwards and holds another smaller figure in its palm, while the left holds a round object which may be a *Kamaṇḍalu.* It is sitting cross-legged (Vajra-paryaṅka-niṣaṇṇaḥ). With the exception of one thing this figure resembles the description of Hari-hari-hari-vāhanodbhava-lokeśvara discovered by Dr. Foucher in the Sādhanā of this Bodhisattva in the Cambridge and Paris MSS. The description is as follows :—

"Purvoktavidhānena S'ūnyatābhāvanānantaraṁ Sita-hrīḥ-kāra-niṣpannaṁ Hari-hari-hari-Vāhanodbhavaṁ Bhagavantaṁ Āryāvalokiteśvaraṁ Sarvāṅgaśuklaṁ jaṭāmukuṭinaṁ S'āntaveṣaṁ (Ṣaḍbhujaṁ) Dakṣiṇakareṇa Bhagavantaṁ Tathāgataṁ Sākṣiṇaṁ-kurvantaṁ, dvitiyenā-kṣamālādhāriṇaṁ Tṛtiyena Duḥkuhakaṁ lokamupadarśayantaṁ, vāmena daṇḍadharaṁ, dvitiyena Kṛṣṇā-jinadharaṁ, tṛtiyena Kamaṇḍaludharaṁ, Siṁha-Garuḍa-Viṣṇu-skandha-samsthitamātmānaṁ dhyātvā; Oṁ hriḥ hūṁ iti mantraṁ japet."[1]

Translation.—"After meditating on S'ūnyatā or void in the manner prescribed above, and after meditating oneself as the noble lord Avalokiteśvara evolved out of the white (mystic) syllable *hrīḥ* rising from the god who has Hari-hari-hari (a lion, the mythical bird Garuda and the lord Viṣṇu) as his vehicle white in all his limbs crowned with clotted hair, dressed in a manner inspiring tranquillity of mind (with six hands), with the right hand calling the lord Tathāgata to witness, holding a rosary in the second (right hand), pointing out the world as badly deceived, holding a staff in the left hand, a black-antelope skin in the second (left) hand, and a Kamaṇḍalu (water-pot) in the third (left hand), and riding on the shoulders of a lion or Garuḍa or Viṣṇu; one should repeat the mystic formula 'Oṁ hrīḥ hūṁ.' "

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[1] E'tude Sur L'Iconographie Bouddhique de L'Inde, Deuxieme Partie, p. 35.

It is to be observed that the form of Lokeśvara here described possesses six arms, whereas the figure under consideration has only two. But this difference is not of much importance since the number of hands in Buddhist Iconography cannot be strictly limited and the figure on the seal and the description in the Sādhanā agree in two of their main characteristics.

The figure on the seal holds in his right hand a smaller figure which is evidently the image of the lord Buddha whom the Bodhisattva holds as witness (*Bhagavantaṁ Tathāgataṁ Sākṣiṇaṁ-Kurvantaṁ*). On the Oxford duplicate of the seal I find the head of an animal with open jaws under the seated figure. This undoubtedly is a lion (Skt. hari) which is one of the Vāhanas of this Bodhisattva.

Out of the remaining four seals three are from the same die. These seals measure 3½ inches by 3 inches and bear a single impression on the obverse. It represents a four-armed figure seated on a lotus under a canopy and with a halo around its head. Without doubt this is the Bodhisattva Avalokiteśvara, surnamed Padmapāṇi. On the right side of his head there is a stupa, and just below this an inscription consisting of "Ye Dharma, etc." in seven lines in the Nāgarī characters of the 11th century A.D. The Bodhisattva Avalokiteśvara is usually recognised by the presence of his spiritual father the divine (Dhyānī) Buddha Amitābha. The number of arms in this case also cannot be limited.[1] According to Dr. Vogel in the case of a four-armed Padmapāṇi one of the right hands is stretched out in the gift-bestowing gesture (*Varada Mudrā*) while the other holds a rosary (Akṣa-sūtra), and one of the left hands holds a lotus stalk, the other holding a book or Kamaṇḍalu. In this image, however, the first of the right hands holds a string which may be a rosary, but I think it is a snare (Pāśa) which is found on certain figures of Avalokiteśvara.[2] This form of the Bodhisattva is known as Amoghapāśa.[3] The other right hand is in the Varada Mudrā. The first left hand holds a lotus-stalk, the other being placed on the lap. But this left hand is indistinct in all of the three specimens and also in the Oxford University Museum's specimen, so that it is impossible to know whether it holds a Pustaka or a Kamaṇḍalu

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[1] Annual Report of the Archæological Survey of India, 1903-4, p. 214-15.

[2] Grünwedel and Burgess's Buddhist Art in India, p. 129, figs. 105-6.

[3] Archæologisch Onderzoek of Java en Madura, pl 19, 19*a*. This statue is inscribed with the name of the Bodhisattva It has eight arms.

M. Foucher's book quotes a Sādhanā in which the Lokanātha has only two arms:—

"Namo Lokanāthāya
Pūrvavat Kramayogena Lokanāthaṁ S'aśiprabhaṁ
Hrīḥ-Kārā-kṣarasaṁbhūtaṁ Jaṭāmukuṭamaṇḍitaṁ
Vajradharmajaṭāntaḥsthaṁ-aśeṣaroganāśanaṁ
Varadam dakṣiṇe haste vāme padmadharaṁ tathā
Lalitākṣepasaṁsthaṁ tu Mahāsaumayaṁ prabhāsvaraṁ,
etc."[1]

Translation.—"Oṁ adoration to Lokanātha. In the same order as before one should meditate upon Lokanātha bright as the moon, evolved out of the mystic syllable hrīḥ, decorated with a crown of clotted hair, bearing in the midst of clotted hair Vajradharma (a name of Amitābha), the curer of all diseases without exception, offering boon by his right hand and holding a lotus in the left, assuming the Lalita posture, exceedingly bright and handsome, etc."

The last seal is oval in shape but one of its extremities has been shaped into a point. It measures 3½ inches by 2½ inches. The impression on the obverse is very shallow. It represents a woman seated on a lotus with one foot tucked under her, while the other dangles from the lotus. It has two arms. The right hand is in the Varada Mudrā, while the left holds a round object. Behind the figure the back of the throne is clearly visible, while over her head appears a garland. Similar garlands are placed in the arches of the shrines of Nepal and Burma. This figure coincides well with the description of Mahattarī-Tārā in the Sādhanā MSS:—

Tārāṁ S'yāmāṁ Dvibhujāṁ Dakṣiṇe Varadāṁ Vāme Sanālendivaradharāṁ Sarvābharaṇabhūṣitāṁ Padmacandrāsane Paryaṅkaniṣaṇṇāṁ Vicintayet."[2]

Translation.—"One should meditate upon Tārā, black, with two arms, offering a boon in the right and holding a blue lotus with its stalk in the left hand, decorated with all ornaments, sitting cross-legged, on a cushion made of the moon and a lotus."

The round object in the left hand is most probably the lotus flower with its stalk (Sanālendīvara). The only difference is that here the lady is not sitting cross-legged, but with one leg dangling from the seat. This is the correct posture of Tārā as found in Nepal.[3]

On the reverse of the first seal there are five small impressions, and on the reverse of this seal thére are two impressions consisting of the votive formula "Ye Dharmā, etc."

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[1] E'tude Sur L'Iconographie Bouddhique de L'Inde Deuxieme Partie, p. 23.

[2] E'tude Sur L'Iconogaphie Bouddhique de L'Inde Deuxieme Partie, p. 64. The figure on this seal is exactly like that of Tara from the Indian Museum reproduced in Foucher E'tude Premier partie, Fig. 23. See also the seals from Sohnāg, J.R.A.S., 1900, p. 433, pl. V.

[3] Oldfield's Sketches from Nipal, Vol. II, p. 172.

Dr. Annandale also placed at my disposal a photograph of two seals from Goah Gambar ("Image Cave)," Ula Pahang, on the eastern side of the peninsula, which are now in the Raffles Museum, Singapore. One of these seals is very small and too far gone to be of any use. The larger one is in a somewhat better state of preservation. It possesses six figures in two rows, three in each. In the first row the figures are similar in size and are seated in the posture of meditation (*Dhyāna mudrā*), on each side of the head of the central figure is a chaitya. In the second row the central figure is much larger and is seated on a raised seat, while the other two are standing. The figures in the first row are Buddhas, and the central figure in the second row has a seven-hooded snake on its head as a canopy which marks him out as the Divine Buddha Amoghasiddhi.[1] This Dhyāni Budda is also to be found on the headdress of Khadiravanī Tārā.[2] The human figures in this photograph are short thickset figures, reminding one of the figures from Java, and form a good contrast to the tall, graceful, lithe figures of the seals described above.

In conclusion, I beg to acknowledge that I have received much help from Paṇḍit Vinoda Vihāri Vidyāvinoda, the Archæological Gallery Assistant of the Indian Museum, specially in the identification of the figures.

ADDENDUM.

Paṇḍit Vinoda Vihārī brought to my notice two stone votive stupas bearing figures of Amoghasiddhi. One of them is placed on a square pedestal of stone. The base of this stupa is circular and plain. On this base a huge serpent is lying coiled, and on the back of the serpent is a large full-blown lotus. The dome of the stupa is placed on this lotus. There are four statues on the four sides of the dome, and one of them is a representation of Amoghasiddha having the seven-hooded snake above its head. It is sitting in the *Abhaya mudrā.* The other figures are seated respectively in the Dhyāna, Varada and Bhūmisparśa mudrās, and so are the figures of the Dhyāni Buddhas, Amitābha, Ratnasambhava and Akṣobhya.[3]

In the front of the figure of Akṣobhya there is a vajra on the pedestal.

The other votive stupa (Br. 14), which is larger in size, is of greater importance to iconographists. The pedestal of this stupa is circular. The base of the chaitya is placed on a full-blown lotus above this pedestal. In this chaitya there are *five* niches around the base, each holding a Dhyāni Buddhā. Generally four Buddhas are figured around votive stupas.[4]

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[1] Cf. Oldfield's Nepal, Vol. II, p. 169, and Grunwedel and Burgess' Buddhist Art in India, p. 62.

[2] Foucher, E'tude Deuxieme Partie, p. 65.

[3] Cf. the description of this in Anderson's Catalogue and Handbook of the Archæological Collections in the Indian Museum, Part II, p. 81, Br. 18.

[4] Annual Report of the Archæological Survey of India, 1903-4, p. 220.

Here we find Amoghasiddhi facing the east with his seven-hooded serpent canopy seated in the Abhaya mudrā on a throne borne by two Garuḍas. Amitābha is facing the west and is seated in the Dhyāna mudrā on a throne borne by two peacocks. Ratnasambhava is seated facing the south in the Varada mudrā on a throne borne by two horses. There are two niches facing the east. One of them contains the figure of Akṣobhya seated in the Bhūmisparśa mudrā on a throne borne by two elephants. The other niche contains a figure of Vairocana seated in the Dharmacakra mudrā on a throne borne by two lions (Siṁha).[1] Statues of Vairocana are not very common. Mahāmahopādhyāya Hara Prasada Sāstri informs me that Vairocana is represented only on the great caitya at Svayambhūnātha in Nepal, and so this may be a copy of that stupa. This conjecture is confirmed to some extent by the presence of the "eyes of the Ādi-Buddha" on the base of the umbrella which are also to be found only on the Svayambhu caitya.[2] Curiously enough both of the caityas come from Behar. They belonged originally to the Asiatic Society of Bengal.

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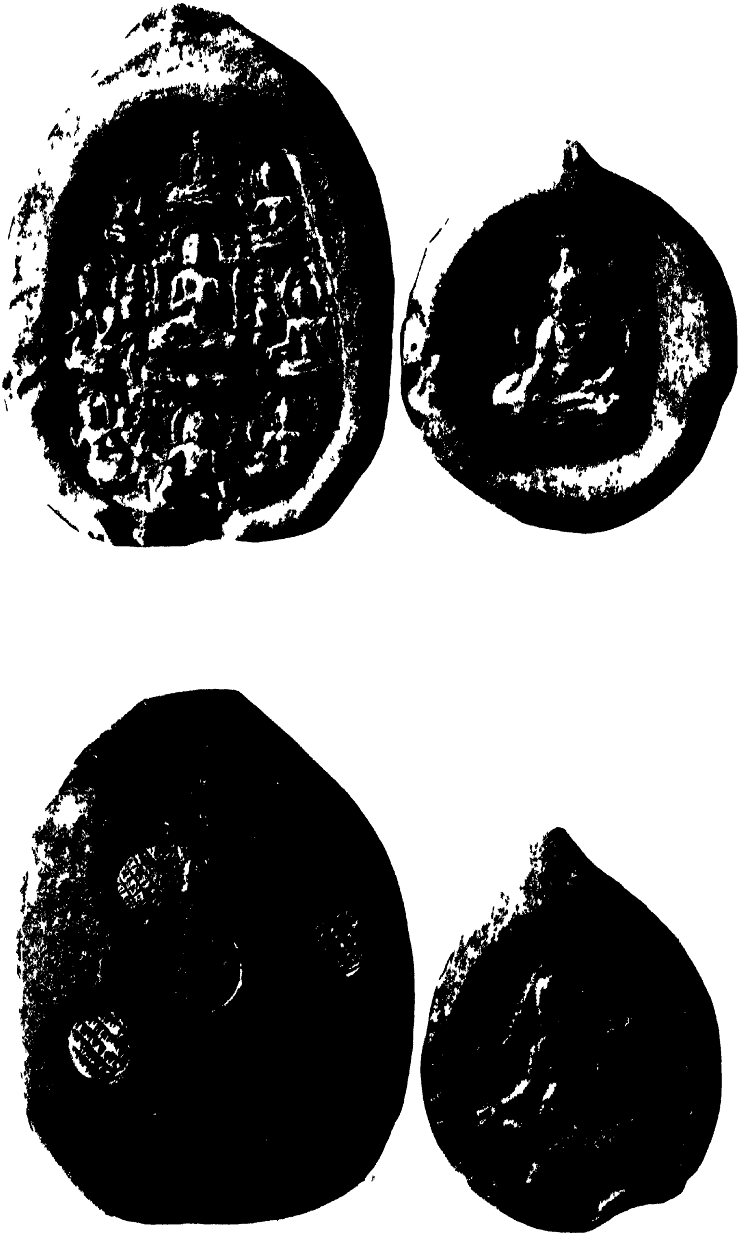
[1] For the description of the Dhyānī Buddhas see Oldfield's Sketches from Nepāl, Vol. II, pp. 166–169.

[2] Cunningham's Bhilsa Topes, p. 8. For a representation of the Svayambhū caitya see Oldfield's Nepal, Vol. I.



Clay Tablets from Malava. (See Journal for July, 1907.)

52. Some Pushtu Folk Tales.

By D. DONALD.

Commandant of the Border Military Police and Samana Rifles, Kohat.

I.

Yo sari na dasi wai che haga khara wogwaindla wakte che akhpla khaza war bande raghla o pah de halat ke haga waledalo. Dhaga shpe sari akple kaze sara ham-bistre kevala lekin khaza munkir shwala o dasi wail ta ta khara ziat khwand warkoi de kar la uoa khara wasata. Sari der was wukŗa lekin khaza akhple khabre bande tīnga shwala. Sari yo mulle ta lar o da de khabra ilaj gwakkhtalo, mulla war ta wowail akhpale kor ke dua waroona jor ka o bia de tol qaum ziafat wukr. Haga wakht che sare kha mor shwal warta soal wukra che doe ke hagoe che khare ghwaindale de pa yoe lare laŗ she o nor pa bale lare. Toļ qaum dhaga war na wowatal che dha khare ghwaindoonki la Muqarar wa. Khaza no poheda che da aib tash ba ma chektan ke nishta o war ta goona wobakhala.

II.

Sare da sind ba yoe ghare bande ghusal kwalo o ba bal ghare bande halikan be jame mushgalidal. Sare der fiqar wurta kowal o ba akhir ke dasi wail. De raghae yo halk che khatoori pa shan koona lari o ze lambhe na sham wahule.

III.

Yo shcikham na dasi khabra kegi che haga yoa "Igbina" moondali wa che da wane ba sange bande wa o las warta na rasidalo. Pa lare yoa khaza tareda o sare wur ta wowail dille rasha o mata teet sha che ze sta pa sha bande wukhezam o "Igbina" kuze kwam. Khaza wur ta wowail ta droọnd ye o ma bi mar, ki, ba kha wi che ta teet she o ze be wukhezham sta sha bande o "Igbina" be kuz kwam. ' Sare da khabra manzoor kwala. Khaza sari pa sha bande wokhatila o las akhpala "Igbina" ta wuqurla. Machai e wucheechale o khaze wērē na mootiaze wukuŗle. Wakhte che mutiaze sare pa mukh bande ratle, haga khial wukaŗ che "Igbina" mata shwala o shait toe shwal. Akhpale zhibe sara zar zar e mutiaze wusaţle o khaza la ziaŗe wukarle che aé Daoosa ta khoaghe khoage ta saṭe o tirkha ma la pregde.

PERSIAN TRANSLATION OF PUSHTU TALES COLLECTED BY MR. D. DONALD.

I.

مردی عمل غیر مشروعي باخر مادهٔ میکرد که زنش در عین کار او را دید همان شب شوهرش خواست با زنش نزدیکي کند ولی زن راضي نشد و گفت چون ازخر لذت مخصوص بر میداري برو یک خر مادهٔ محض برای این کار نگهدار و از من دست بکش - هرچه شوهرش حجت و دلیل آورد زن قبول نکرد و سر حرف خود ایستاد - پس مرد نزد ملاّئی رفت - و چارهٔ این بد بختي خود را ازو خواست - ملاّ گفت " برو در خانه‌اش دو در بگذار و تمام مردهای قبیله را به مهماني بطلب وقتیکه همه خوب سیر خوردند از ایشان خواهش کن که آنهائیکه بخربند شده اند از یکدر خارج شوند و آنهائیکه نزدیک این فعل نرفته اند از اندر دیگر بیرون روند " - مرد بگفتهٔ ملا عمل کرد و همهٔ مردم ها از دریکه برای خر جفت شوها معین بود بیرون رفتند - آنوقت زن معلوم کرد که شوهرش تنها این مرض را ندارد پس او را بخشید *

II.

روزی مرد پیری بکنار جوئي جان مي شست - آنطرف چند نفر از بچها لخت در آب بازي میکردند - مرد پیر تا چندی سوی آنها خوب نگاه کرد و یک مرتبه بسخن در آمد و گفت * * شعر *

اینک پسری جوان برامد * هردو کفلش نه سیم[1] ماند
افسوس که من نمي توانم * نزدیک باو شنا نمایم

III.

آورده اند روزی یکی از شیخون خانهٔ زنبوری بر سر شاخی دید که دستش بان نمیرسید - زنی از آنجا میگذشت باو گفت ای زن بگذار که بر دوشت سوار شوم تا دستم بآن انگبین برسد - زن گفت تو خیلی سنگیني و سنگینیت

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[1] در اصل نسخه به شفتالو تشبیه داده - قاآني کفل را با سیم یا کوه تشبیه میدهد - رخسار را با سیب *

مرا میکشد - بگدار من سر دوش تو سوار شوم و انگبین را پائین بیاورم - مرد این مطلب را قبول کرد - ولی دراز کردن دست زن همان و نیش زدن زنبور همان - زن از ترس بذا کرد شاشیدن - همینکه شاش زن گرم گرم بر بالای صورت مرد ریخت - او خیال کرد که این انگبین است که میریزد فوراً بنا کرد زود زود با زبان لیسیدن چون دید که طعمش تلخ است بزن دشنام داد و گفت شیرینیها را تو میخوري و تلخیها را میگذاري براى من *

53. Notes on Indian Mathematics.—Arithmetical Notation.

By G. R. KAYE, *Bureau of Education, Simla.*

I.

We are told that our modern arithmetical notation is of Indian origin. Peacock, Chasles, Woepcke, Cantor, Bayley, Bühler, Macdonnell and others state this more or less emphatically, and the encyclopædias and dictionaries follow suit. A careful examination, however, of the material now available seems to point out that the hypothesis as to Indian origin was arrived at without sufficient warrant. Such an examination shows, at any rate, that many of the premises that were utilised are unsound.

In the first place the opinions of the commentators were taken as gospel by the early orientalists, and, secondly, the opinions of the orientalists were taken as gospel by the mathematicians. Numerous examples of the false premises used and the resulting errors could be quoted, but as many will be noticed in the course of this essay, they may be passed by for the present. The following statement, which has been employed to show that our modern notation was in use in very early times in India,[1] is an extreme illustration: "The invention of nine figures (*anca*) with the device of places to make them suffice for all numbers being ascribed to the beneficent creator of the universe." (Kṛishṇa, 16th Cent.). No one would now dream of taking such a statement as evidence, but "the Brahmin view in possession of the field, when Europeans entered India, has been regarded so long with reverence among us that it seems almost an impertinence now to put forward any other."[2] As, however, it is now known for certain that the old Indian commentators are often unreliable we must, to arrive at any safe conclusion, treat most of their glosses as of no value as interpretations. The commentators were often given to "expressions of vague boasting, of ambiguous import and of doubtful authority"[3] and those who have trusted in them (*e.g.* Colebrook) have naturally fallen into error. As Rhys Davids says, we must now abandon "the unhappy system of taking these ancient records in the sense attributed to them by modern commentators."[4]

The kind of evidence regarding notation that can be accepted without fear is such as is recorded on coins and in genuine inscriptions. Evidence in manuscripts can only be accepted with respect to the actual date of the manuscripts themselves, for, it must be borne in mind, copyists have always had a tendency to adapt notations to the systems in vogue in their own times and to correct figures or alter them in accordance with some particular convention. Numerous examples of such changes could be quoted, but the most striking one for my purpose is that made by Dr. Fleet in the Corpus Inscriptionum Indicarum, volume iii., page 73. He there quotes as the earliest epigraphical instance in India of the use of 'numerical words' the record of "Saka Samvat 867 (A.D. 945–46) for the accession of the Eastern Chalukya king Amma II (Ind. Antiq. vol. vii., p. 16) in which the date is expressed by the (eight) demi-gods called Vasu, the (six) flavours, and the (seven) mountains." In the original inscription the date is given by the words "*giri-rasa-vasu, etc.,*" which is correctly translated (by Fleet himself. Ind. Antiq. vii., p. 16) by the words "The (seven) mountains, the (six) flavours and the (eight) kinds of demi-gods called Vasu" (*i.e.* the Saka year 867). Note that Dr. Fleet, in the first quotation given above, *changed the order of writing the date.* Instead of writing "mountains, flavours, vasus" he wrote "vasus, flavours, mountains" just as we might write 867 for 768 by mistake. But with Dr. Fleet it is not a mistake, that is, it is not an accidental mistake, for he gives other examples with just the same inversion. What he actually did was to alter the Indian plan of writing the smaller elements first to our convention of writing the larger elements first, evidently attaching no importance to this order of writing. As a matter of fact, this point is of the utmost importance in any investigation regarding the origin of our notation and forms a valuable link in my present argument, indeed, forming the starting point of my essay. Also first-hand evidence of every kind that is available has been sought—evidence that cannot have been corrupted in transit. It has also been necessary to investigate certain other evidence, not because of its real value but because of the importance that has been attached to it by other investigators.

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[1] Colebrook, *Algebra from the Sanskrit*, p. 4; Encyclopædia Britannica, ii, 526.

[2] Rhys Davids, *Buddhist India*, p. iii.

[3] ib. p. 319.

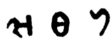
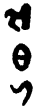
[4] ib. p. 162.

II.

Sanskrit and kindred scripts are now written from left to right. There was, indeed, in ancient times, an alphabet to which has been attached the name Karoshthi, in use in the north-west of India, the characters of which were written from right to left instead of from left to right, as was the case with its contemporaneous Indian script; but this affects the question only remotely. The fact of importance is that Sanskrit and kindred scripts are, and have been, for centuries, written from left to right, while the Arabic family of scripts are written from right to left. It would be natural to expect number words and symbols to be affected by the mode or direction of the writing. For example, it would appear strange to see numerical symbols written horizontally in conjunction with a vertical script. If the development of the knowledge and use of numerical ideas and language with any people have generally followed the same lines, some indication would probably appear in the language.

In the early stages of any language, we generally find that the smaller elements of the higher numbers are expressed first. Thus we have *two and hund seofontig* in Alfred's Chronicle for our modern seventy-two; and the Germans still keep to this old fashion much more than we do. In Herodotus we find such examples as the following: ἑπτα και διηκοσιαι και χιλιαι; and in Sanskrit there are numberless examples with the names of the smaller numbers placed first. Such examples as *fifteen*, *quinta decima*, *tryodaca*, *dreizehn*, etc., etc., are found in many languages.

The popular idea that the order of our (European) arithmetical notation is the more natural and convenient order [1] is not correct. Our order is inconvenient and clumsy and the reverse order would be much more suitable.[2] If we adopted the reverse order we should write the present year of the Christian era 7091 instead of 1907. The order in which we do write our numbers is contrary to the nature of our script and has been imposed on us by a people with a right to left script. This conclusion, if generally acknowledged as correct, would appear to dispose of the question as to the notation in use being of Indian origin. But there are many complications that have to be cleared away. In some cases the scripts in use have actually changed in their order of writing, but as this was, in most instances, long before arithmetical notation was well developed, it does not greatly affect the question. In the time of Herodotus *boustrophedon* writing had vanished and the left to right order had been generally adopted. Herodotus therefore followed the natural order in writing his smaller elements first. The Greek notation of the time also followed the same plan. We have numerous examples on coins such as Α Π Ρ (=1+80+100) and Η Ι (=8+10,). However, some time about the beginning of the Christian era, a change took place and both the number, words and symbols began to be written in the reverse order, *e.g.*, Ρ Σ Θ (=100+60+9). Here is a change that complicates matters and which, as far as I know, has not yet been explained.

But the notations that are of special interest to us now are those that immediately preceded our modern notation in India. First there is the notation that may be termed 'old Indian.'[3] It is a decimal notation, but does not recognise the value of position, and separate sets of symbols were used for the units, tens, hundreds, etc., *e.g.*, two hundred and twenty-two was expressed by ϒ ● ⩯ and so on. The larger elements were generally written first as in the example just given, where ϒ is equivalent to 200, ● to 20 and ⩯ to 2. This order was in opposition to the early custom of the language which expressed the smaller elements first and in contradiction to other systems of notation which, later on, were in common use among the Hindus; and we find many examples of dates expressed in words only or in words and figures, and, in such cases, the words are often formulated somewhat as follows: " nava-śata pañchashashty-adhikeshu," that is, with the hundreds first, then the units before the tens—a mixed order it may be termed. But in the very early instances, according to Don Martino de Zilva Wickremasinghe (Journ. Roy. Asiatic Soc. 1901, p. 301), these " ancient Brāhmī numerals are invariably read either from right to left or from bottom to top. Thus, in writing 128, the symbols would be written either horizontally as  (*i.e.*, 100, 20, 8), or vertically 

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[1] So stated to be by Sir E. C. Bayley.

[2] See Perry's *Practical Mathematics* and any work on the theory of numbers.

[3] Sometimes called Brâhmi, or 'numerical symbols.'

In Sanskrit this would be read ashṭā-viṃsāti-śatam, *i.e.*, eight-twenty-hundred."

This old Indian notation has never been completely superseded. Ephigraphical instances of the thirteenth century A.D. have been found, and, according to Bühler, "The Malaylam MSS. have preserved it to the present day." (Bühler, *Indian Palæography*, 77).

Âryabhaṭa introduced, it is said, an alphabetical notation, as there was no convenient system in use in his time.[1] This notation of Âryabhaṭa's appears to be a somewhat crude adaptation from the Greek (or Arabic) plan. Its merit (?) is that it can be used in verse and, probably, it was not used for actual calculations. Âryabhaṭa did not employ the idea of 'place value' and used twenty-five letters for the first twenty-five numbers. For this purpose were allotted the classified consonants. The unclassed consonants he used for the tens (above twenty) and the vowels as multipliers. Thus the consonants क, ख, ग, ... म stood for 1, 2, 3. . . . . 25. For 30, 40 . . . . 90 he used य, र, . . . ह; while ि, ु . . . . . indicated multiplication by 100 . . . . . 10,000, etc. Strangely enough this notation is not used in the mathematical part of Âryabhaṭa's work. It occurs only in the astronomical part.[2]

I have found no epigraphical examples of Âryabhaṭa's system in its original form, and the earliest case of an alphabetic notation known to me is of the twelfth century A.D. At this time the idea of place value had been well established and, consequently, Âryabhaṭa's notation had become modified. The noteworthy point about all the examples of this alphabetic notation is that it was always employed with the smaller elements first (*i.e.*, on the left). For example :—

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[1] It is also said that *Pāṇini* denoted numbers by the letters of the alphabet in their order precisely in the same manner as the Greeks and Arabs (Weber, Ind. Lit., 222).

[2] See Kern's edition, p. 17.

तवलोके (त=6, व=40, ल=300, क=1000, *i.e.* 1346,) Epigr. Ind. iii., 40.

राघवाय (र=2, घ=40, व=400, य=1000, *i.e.* 1442,) Epigr. Ind. vi., 112.

मकालोके (म=5, क=10, ल=300, क=1000, *i.e.* 1315,) Epigr. Ind. iii., 229.

These examples follow the system described in Bühler's Indian Palæography. The series *k*............ ñ=1......... *o*, *t*... ...*n*=1......... *o*, *p*.........*m*=1......5 *and y* ....*l*=1............9. This is practically the same as the so-called Âryabhaṭa's notation modified by the principle of 'place value.' L. D. Barnett gives some examples from Pali MSS. (Journ. Roy. Asiatic Soc., 1901, p. 21) from which he deduces the following values: k, t, p, y=1; kh, th, ph, r=2; g (and presumably d or b)=3; bh (and gh, dh?)=4; m, ṇ (and n?)=5; l=7: zero initially a, internally n. The use of a=o, he says, is not clear, and he premises that the reduplication of consonants does not affect their value. For example, guṇaggaram=2352; raṭṭhakkhayam=1222; alappâyan=1170; bhanuvakkhaṃ=2404; gammakhakke=1253.

Here again we have the smaller elements first (*i.e.*, on the left). Burnell expresses this idea by saying: "The order of the letters is from right to left." (Burnell, South Indian Palæography 79). Of course, this is not quite right. The order of the letters is the order of the script, *i e.*, from left to right, but the numbers were always expressed with the smaller elements first and not, as is the custom now, with the higher elements first. Burnell describes another system (Burnell, *loc. cit.*) which "is only applied to numbering pages of MSS.; it was used a good deal in Malabar . . . . By this system the consonants (with short a, and in their usual order) stand for 1, 2, etc., up to 34, and then they are repeated with long a, *eg.*, K ā=35, khā=36 and so on."

Albiruni tells us that Brahmagupta invented another system of notation generally designated by the term 'numerical words.' Albiruni said: "If you want to write *one*, express it by everything which is unique, as the earth, the moon; *two* by everything which is double, as *e.g.*, black or white; and so on." It is, however, very doubtful whether this system was invented by Brahmagupta. It was probably introduced into India from the East. Fleet says: "The earliest epigraphical instance at present available in India itself is the record of Saka Samvat 867 (A.D. 945-6) for the accession of the eastern Chalukya King Amma II." (Corp. Inscript. Ind., p. 73); while, according to Dr. Lüders, the earliest instance is the stone inscription of Chaṇḍamahâsênaat Dhôlpur, dated Vikrama Samvat 898 (Epigr. Ind. iv., 335); and Bühler quotes the Cicacole inscription (A.D. 641) which, however, is now known to be spurious (Ind. Antiq. xxx., 214), and the Kadab inscription (A.D. 813) which is deemed doubtful by Lüders (Epigr. Ind. iv., 335) and Fleet (K.D.).

The use of this notation has also been attributed to Aryabhaṭa and Dr. Kern (Journ. Roy. Asiatic Soc. xx., 371) even concluded from a supposed example of it that he quotes that Âryabhaṭa had made use of the idea of place values; but Dr. Bhau Daji showed that the passage on which Dr. Kern's conclusion was based is spurious. Woepcke quotes a similar example from the Surya Siddhânta, but concludes only that "L'idée de la valeur de position et du zéro est donc dans l'Inde aussi ancienne, au moins, que cette méthode d'exprimer des nombres au moyen de mots symboliques" (Journal Asiatique, 1863, p. 447).

Of epigraphical instances of these symbolic words I have come across two only of the ninth century, three of the tenth, a few of the eleventh and numbers of later date. In every instance, except perhaps very modern ones, the smaller elements are written first as the following examples show:—

करबाणविश्वमिते *i.e.*, reckoned by the hands (2), the arrow (50), and the *visvas* (1,300) or 1,352 (Epigr. Ind. v., 67);

वेदवस्वग्निचंद्र *i.e.*, vedas (4), vasus (80), fires (300), moon (1,000), or 1384 (Epigr. Ind. i, 94);

युगखेंदुरूप *i.e.*, yugas (4), the sky (0), the moon (100), and the rupa (1,000), or 1104 (Epigr. Ind. vi., 155); etc., etc.

"The practice does not seem to be one of very great antiquity, and many of the supposed older dates are doubtful," says Mr. Damant (Ind. Antiq. vi., 13).

Albiruni gave a list of words in use in this system. Other lists are given in Brown's *Carnatic Chronology* (p. 20 f.), Rice's *Mysore Inscription*, Buhler's *Indian Palæography*, Burnell's *South Indian Palæography*, etc. The system has been in use in Java, Cambodia, Burma, etc., and possibly came from the east to India.

In the lists just mentioned symbolical words are given for numbers as far as 48, and as many as forty words are given for one particular number. This leads one to suppose that either the numerical word system was actually in use before the idea of place value was known, or that those who used it in early times were either ignorant of the modern system or ignored it. But as the earliest known examples of this word notation being used in India do not occur until after the modern notation with its principle of place value was introduced this aspect of the question is not of great importance. However, from the thousands of examples that occur in Indian manuscripts and inscriptions, the fact that the order of writing numbers with the smaller element first was a recognised principle throughout India is strongly emphasized.

The occasional and peculiar use of vertical writing of numbers has already been noticed. In the Weber MSS. (Journ. Asiatic Soc. Bengal, 1893) examples are found and Dr. Kielhorn discovered some old manuscripts in which the pages were numbered vertically as well as in the usual manner.

From our present point of view it is important to notice that these numbers were read from bottom to top, *i.e.*, with the smaller elements first. It appears that this method of writing is, in some way, connected in origin with some vertical script and interesting issues are suggested which must, however, be set aside for the present.

In many MSS. the signs of the old Indian or Brahmi notation approximate more to the forms of letters. Prinsep's idea was that the figures were representatives of the initial letters of the cardinal numbers, but this idea has long been given up (Ind. Antiq. vi., p. 48). Pandit Bhagvantal Indraji attempted to show that the Nāgarī numerals were *aksharas* or syllables, and his conclusion was accepted by Bühler; but no satisfactory explanation based on this principle has been found for the forms of the different symbols. Indeed, it is now pretty certain that the more modern letter forms found in manuscript are simply developments of the older numerical symbols.

III.

Fleet gives (Corp. Inscript. Ind., 209 n.) the following as the latest known examples of the use of the old notation or 'numerical symbols' in India:—

Circ. A. D.		
757	Gujarat Karachi grant of Kakka.	S S. 679
794	Bengal grant of Vinayakapala.	H.S. 188.
822	Central India Shergadh (Kota) inscription of Samanta Devadatta.	V.S. 879.
854	A Nepal inscription. ...	G.S. 535.

But now there are known instances of the use of these symbols of a much later date. For example, we have the Katmandu inscription of the reign of the Rajadhiraja Mandera of Newar Samvat 295, *i.e.*, A.D. 1139. (Epigr. Ind. v. app. 76); and, as noted above, epigraphical examples of the thirteenth century are known and certain manuscripts have preserved this notation to the present day (Bühler, *Indian Palæography*, 77).

In the twelfth century we find examples of the old numerical symbols, the word symbols, alphabetic notations and the modern place value system in use in India. This period appears to have been one of transition, but the evidence of such transition is extremely meagre; and it is noteworthy that of these various systems the one which afterwards predominated was not the modern place value (so called decimal) system, with the invention of which the Hindus have been credited, but the 'word symbol' notation.

Another noteworthy fact, which has often been indicated by epigraphists, is the marked difference between the old symbols and those of the modern system in use about this time, *e.g.* Bühler writes: "Occasionally the same documents combine the naught and other figures of the decimal system with the ancient numeral symbols. Similar mixtures occur in some later inscriptions." (Bühler, *Indian Palæography*, 78). That in India a new set of symbols came into existence with the new notation and that the old ones were discarded is remarkable. Of course, of the old symbols ten only would be required for the new system, but when it is pretty plain that, at the most, only two of the old figures were employed (and these are extremely doubtful) in the new notation, it points to no uncertain conclusion. But however interesting the derivation of the forms of the symbols may be, it is apart from my subject. The only conclusions yet arrived at by the investigation of the forms are extremely fanciful probabilities at their best.

As regards the introduction of the new notation, *i.e.*, a notation in which the idea of 'place value' is utilized, the earliest Indian epigraphical instances are contained in the following list which has been compiled from those given by Fleet (Corp. Inscript. Ind., 209 n.), Kielhorn (Epigr. Ind. iv and vii) and others. This list contains many examples of no value, as will be shown in the sequel; but, as most of these worthless examples have been used at some time or other in establishing the pro-Indian theory, it is necessary to quote them here :—

	Cir. A.D.		
(1)	339	S. 261 Kalbhavi inscription	Ind. Antiq. xviii., 311. Ind. Antiq. xxiv., 11.
(2)	594	C. 346 Gurjāra grant from Sankheda	Epigr. Ind. ii. 20.
(3)	646	S. 568 Belhari inscription	Journ. Asiatique, 1863.
(4)	674	V. 731 Kaṇheri inscription	ib. p. 392.
(5)	683	G. 365 Kaira plates of Siladitya III	Journ. Asiatic Soc. Bengal, vii., 969.
(6)	736	V. 794 Dhiniki copper-plates of Jaikadeva	Ind. Antiq. xii., 155.
(7)	754	S. 675 Samangad grant of Dantidurga	Ind. Antiq. xi., 110f.
(8)	804	S. 726 Baijnath inscription	Epigr. Ind. i., 112.
(9)	813	S. 735 Torkhêde copper-plates	Epigr. Ind. iii., 54.
(10)	843	S. 765 Kaṇheri inscription, A.	Ind. Antiq. xiii., 136.
(11)	853	S. 775 Kaṇheri inscription, B.	Ind. Antiq. xiii., 134.
(12)	860	S. 782 Kalyān Ambarnath temple	Ind. Antiq. iii., 320; xvii., 94.
(13)	862	S. 784 Dēogaḍh Jaina inscription V. 919	Epigr. Ind. iv., 310; Arch. Survey, x.
(14)	876	V. 933 Gwalior inscription of Bhojadēva.	Epigr. Ind. i., 159.
(15)	867	S. 789 Bagumra inscription	Ind. Antiq. xii., 181; xxiii., 131; xviii., 56.
(15*a*)	867	S. 789 Gujarat inscription	Epigr. Ind. vi., 287.
(16)	877	S. 799 Kaṇheri inscription, C	Ind. Antiq. xiii., 135.
(17)	882	H. 276 Pehevā inscription of Bhojadeva	Epigr. Ind. i., 186.

In the above list I have given, as far as I know, every inscription before the tenth century that has been supposed to be dated in figures of the modern (place-value) notation. Let us now examine these examples and see how they bear on the question of the introduction of the new system of notation. To those who are not familiar with Indian inscriptions it is necessary, in the first place, to explain that "the task of the student of Indian antiquity is now-a-days complicated by the existence of the most ingenious forgeries in every branches of research." Indeed, about fifty per cent. of the discovered South Indian copper-plate grants are now known to be forgeries, and the chief period of fabrication appears to have been about the end of the eleventh century when "there occurred a specially great opportunity to regain confiscated endowments and to acquire fresh ones." (Fleet, Ind. Antiq. xxx., 205.)

It is therefore necessary not to place implicit faith in every inscription one comes across. However, for the present, we must be satisfied with the exclusion of those examples that we can show with sufficient reason to be untrustworthy as evidence; and we must accept those that do not bear obvious marks of unreliability.

The epigraphists in interpreting these dates have rightly looked principally to historical accuracy, and when the dates have been given in words the figures have been interpreted so as to fit in with the words. This is natural enough from the epigraphists' point of view, when direct interpretation is impossible; but it is in just such cases that the figures themselves cannot, except with the greatest circumspection, be adduced as evidence. Again it has generally been assumed (without proper authority) that the knowledge of the new notation was common in India much earlier than the ninth century A.D., and on this assumption some of the interpretations of the dates are based. The figures of these dates, if they are to serve as evidence of the use of the modern notation, must at least be capable of interpretation in themselves; they must, of course, belong to reliable inscriptions and they must contain elements of consistency. Bearing these points in mind let us proceed to the examination of the examples cited.

(1) The Kalbhavi inscription of S. 261 is "spurious, so far at any rate, as regards the date; the writing is of about the eleventh century A D." (Epigr. Ind. vii., p. 22, App., Ind. Antiq., xxiv., 11).

(2) Dr. Bühler quotes this Gurjara inscription of the Chedi year 346 or A.D. 595 as "the earliest epigraphic instance of the use of the decimal (*i.e.* the modern 'place-value') notation" in India. An examination of the plate (Epigr. Ind. ii., p 20) suggests the possibility that the figures were added some time after the plate was engraved. The date is given in words as well as figures. It is 'three hundred years exceeded by forty-six, 346.' The symbols are right at the end of the inscription from which they are marked off by the double bar in a most unusual manner. The figures (Table I (*a*)) are of the type of the period, as Bühler remarks, but

they were also in use much later, and in no other known example are such symbols used with place-values. Also there are nine known examples of inscriptions later than this one with Chedi dates written in the old notation (Epigr. Ind. v., app.), *e.g.*, there is another grant of the Gurjaras of Bharoch in which the date saṁ 391 (*i.e.*, A.D. 640) is given in the old notation. Again there is no other known Chedi date, at least before the eleventh century A.D., given in the modern (place-value) notation. There cannot be the remotest doubt as to the unsoundness of this particular piece of evidence of the early use of the modern system of notation in India.

(3) In 1863 Thomas (Journal Asiatique, p. 380) wrote: "The oldest example of the original types of figures endued with local value . . . . is to be found in a brief inscription of Belhari in the Jubbalpur district which commences Samvat 703 Saka 568 (or A.D. 646-7). The figures there appear, it must be confessed, in a suspiciously modern form (Table I (*b*)) . . . I do not quote these figures with confidence."

(4) In continuation of the passage just quoted, Mr. Thomas writes, "The next date in order of priority, which I can refer to, occurs among the Kaṇheri inscriptions, but the date is expressed in numerals only and the Samvat is not specially defined . . . . supposing the date to refer to the Khramaditya era, it will correspond with A.D. 674." Mr. West gives the figures of this date, Table I (*c*), which he interprets as 731 or 732. (*ib.* p. 392).

(5) Kielhorn marks the figures of this date doubtful (Epigr. Ind. v. app., p. 68).

(6) The Dhiniki plates of V. 794 were quoted by Bayley as the earliest example of the 'modern decimal system.' The date is given in words and also in figures (Table I (*d*)). The plates have been proved to be spurious. (Ind. Antiq. xxx., p. 216).

(7) The Samangad plates of S. 675, or A.D. 754, are also quoted by Thomas and Bühler. The former writes, "A third . . . . date about the true application of which there is also great doubt, is to be seen in the copper-plate grant of Dantidurga . . . . which carries with it in its date the Saka date of 675 (in written words) together with the corresponding Samvat (Vikramaditoya) defined by figures 810 or 818 about A.D. 753-4." Bal Gangadhar Sastri read 811 for this date, but, according to Dr. Fleet, he was entirely wrong. "The Sastri's facsimile," he says, "is faulty, as well as his transcription and translation. The first two figures are approximately of correct form, and mean, not 8 and 1 as read by him but 6 and 7. But whereas in his facsimile the third figure is represented as identical in form with the second, and, like the second, is taken by him to mean 1, in the original there is a very important difference, consisting of a prolongation of the left down stroke and then a course up to the left, which makes it 5, not 7 as it stands." Dr. Fleet afterwards stated that this record had been tampered with (Ind. Antiq. xxx., 213).

(8) In the impression of the Baijnath inscription of S. 726

there are, according to Bühler (Epigr. Ind. i, 103), "three numeral signs, the first of which is clearly 7. The following two may have been 26, as Sir A. Cunningham has read them and has represented them . . . ., but in the impression they are by no means certain."

(9) There appears to be no direct evidence to show that the Torkhêde plates of S. 735 or A.D. 813 are not reliable. Bühler quoted them, but Dr. Lüders' argument against the authenticity of the Kadaba plates, in which the date is recorded in word symbols (Epigr. Ind. iv., 335, and Ind. Antiq. xii., 18), holds more forcibly in the case of the Torkhêde plates. The next unsuspicious date, it will be seen, is S. 789 or A.D. 867, and there are no others until the tenth century. These rather wide gaps call for some explanation.

(10) The figures are marked in Dr. Kielhorn's list as doubtful.

(11) A transcript of the Kanheri inscription of S. 775 is given in Ind. Antiq. xiii., p. 134. No plates are given and Dr. Kielhorn says the date should be 773. The transcript was made for an eye-copy published by Dr. West, whom we know to be unreliable in the interpretation of figures. "The forms of the letters are essentially the same as the Samangad copperplate grant of Saka 675" (q. v.).

(12) I have found no published plates of the Kalyan Ambarnath temple inscription of S. 782 and it is omitted from Dr. Kielhorn's lists. We may neglect it as evidence.

(13) The Dêôgadh inscription of S. 784 and V. 919 is one of the examples given by Dr. Fleet, according to whom "The date, *as far as the lithograph can be relied upon*, is Samvat 919 Asvâyuja-śukla-paksha-chaturdśyaṁ Vṛihaspati-dinêna uttara-Bhâdrapada-Nakshatrê . . . . Śaka-Kâl-âbda-sapta-śātānichatur-áśity-adhikani, 784. It answers, by general Cunningham's calculation to Thursday, the 10th September, A.D. 862." The symbols (Table I (*g*)) are extremely suspicious.

(14) In the lithograph of the Gwalior inscription of V. 933 the figures of the date (Table I (*h*)), to say the least, are curious although the other figures contained in the plate, *viz.*, 270, 187, 50 are normal enough, but of the 11th century type; and there are other curious points connected with them. Dr. Hultzsch writes: "At the time of this inscription the ruler of Gwalior was the *parameśvara* Bhojadeva. Another inscription of a *parameśvara* Bhojadeva was discovered by General Cunningham at Deogarh (v. *ante*). Its date Samvat 919 and Śaka 784 led General Cunningham to suppose that the date of this Gwalior inscription, Saṁvat 933, has to be referred to the Vikrama era. Referring to the date of an inscription at Peheva, Saṁvat 276 (see below), to the era of Śrîharsha, General Cunningham further identified the *paramesvara* Bhojadeva of the Deogarh inscription and of this Gwalior inscription with . . . . the son of . . . . Râmabhadradeva . . . . Another identification of General Cunningham is also uncertain." (Epigr. Ind. i., 155).

(15) There are two plates of the date S. 789. The

Bagumra plates are described in Ind. Antiq. xii. (p. 179) as resembling in execution the Samangad plates of S. 675 very closely, while in some respects they are very like the Dhiniki plates.

The Gujarat plates of this date have the date in figures (Table I (*i*)) which stand out in the impression with remarkable clearness. The plate seems to have been polished in the space occupied by the figures which appear to be engraved with such boldness that the impression is given that they have been 'touched up.' The connection between this date and the Torkhêde date will be noted upon below.

(16) This Kanheri inscription of S. 799 is described along with No. 11, in Ind. Antiq. xiii. (p. 133f.). No plates are given. See row iii. of Bühler's Table.

(17) Dr. Mitra published a portion of the Peheva inscription of H. 276 or A.D. 882 (Ind. Antiq. xv., 90) and according to Dr. Fleet (Journ. Asiatic Soc. Bengal, xxxi., 407), "In referring to this, he rectified his former version of the date and recorded that it was unmistakably Samvat 279, which, after considering and rejecting the Vikrama, Valabhi, Sena and Sivasimha areas, he came to the conclusion must be referred to some unknown local or family era . . . . In 1864 General Cunningham took up the subject. In the first place, working on the facsimile that had been published by Dr. Rajendra Lal Mitra as Samvat 216, which, if referred, as he suggested it should be, to the era of Harsha-vardhana of Kanauj, would give A.D. 823; but with the possibility of the correct reading being 276 or A.D. 883 which would identify this Bhoja inscription with his namesake of Gwalior . . . . Subsequently he announced that the real reading was Samvat 276."

This individual examination of the inscriptions practically eliminates all but two, *viz.*, the Torkhêde plates of S. 735 (A.D. 813) and the Gujarat plates of S. 789 (A.D. 867). Let us now see to what result a comparison of the symbols used in the different inscriptions leads.

In Table I are shown, besides those examples quoted above, all those of the tenth century that I have been able to collect. Of the examples of the special period under consideration (*i.e.*, up to 900 A.D.) all except *f* and *i* are copied from lithographs, and it must be borne in mind that these lithographs are only approximately correct copies of the originals. When a symbol was not understood it would naturally be made to approximate to some symbol familiar to the interpreter; and in all the cases under discussion the interpreter argued from the following false premiss—that the decimal (*i.e.*, the place-value) notation was in common use in India in these early times. The validity of this premiss has been mildly questioned on one or two occasions, whereupon the sceptic was confronted with the above array of epigraphical examples.

A superficial examination of Table I leads one to suspect that (*a*), (*b*), (*c*), (*e*), (*g*), (*j*) are out of place; the symbol for *eight* in example (*i*) is unique and example (*f*) appears to be a century before its time. Compare these facts with my notes above. The very doubtful examples are from old-fashioned lithographs not reproduced by merely mechanical processes. Although one may not attach great weight to the forms of symbols as evidence, yet an examination of this table almost drives one to conclude that example (*l*) is the earliest that is not *prima facie* suspicious.

The earliest known inscription that contains a complete set of figures is of A.D. 1050 (Ind. Antiq. xii., 202) and the next that I have come across is of A.D. 1114 (Epigr. Ind. i., 34). In the former of these (Table II) the remarkable variations of the 6, 8 and 9 that occur are noticeable, and also the peculiar symbol for seven [1]; in the other the form of the second 'eight' is probably accidental. I am inclined to accept the second set of figures as typical of the period and I am doubtful about the first set, the lithograph is so beautifully clear; but neither helps us to attain any immediate solution.

Bühler in his *Indian Palæography* gives some of the symbols quoted above as authentic examples (see Table III). There cannot be any doubt about the examples in rows i, ii, iii, and v being extremely unreliable. They are not in the remotest degree authentic. A careful examination of his table leads to the same conclusion as that given above. Burnell states that examples in South India do not occur before the year 1,000 A.D. He quotes some Nāgarī tenth century figures, but does not give a reference. On palæographic grounds we are forced to fix the 9th century A.D. as the earliest period in which the modern place-value system of notation may have been in use in India.[2] This earliest period depends upon one inscription only. If this inscription, on further light being thrown upon it, proves unreliable (as it possibly will), then we shall have to fix the tenth century as the earliest period. Even for the tenth century there is not an excessive amount of good evidence, and it is within the bounds of possibility that we may have finally to turn to the 11th century for evidence of the use of our modern system in India.

IV.

As stated above, the object of this paper is not to establish any particular theory, but to re-open the question by showing that the premises of the earlier orientalists were, in many cases, unsound and that their conclusions as to the Indian origin of our notation, and on Indian mathematics generally, were possibly wrong. It is therefore necessary to consider several minor points whose importance has possibly been exaggerated. For example, Bayley notices the use of the abacus [3] in early times, and the principle it involves of the value of position, and contends that the value of position and the invention of the zero, which are so obviously derived from the use of the abacus, are both of Indian origin. That the abacus played a very important part in the development of our notation no one will deny, but for Bayley's argument it must be shown that the abacus was in the use in India in early times. Now, as far as can be made out, the only evidence of the use of the abacus in India is contained in the introduction of Taylor's *Lilavati*. Rodet states that in Arabic and Persian manuscripts one often comes across arithmetical calculations effected by means of the 'tableaux à colonnes.' On the other hand we find that "in no existing Sanskrit MS. is there any evidence of the use of the 'tableaux à colonnes.'"

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[1] Bühler quotes this example, but omits these peculiarities.

[2] Of course 'no evidence' is not 'proof' and it is *possible* that the new notation was in use long before it appeared in inscriptions.

[3] Bayley makes the following remarkable statement: "The use of the 'abacus' is still common in every village bázár in India, and has been uni-

It is possible that the foundation of Taylor's statement is the custom of writing in the sand in India. Albiruni says: "They do not use them (the Kashmir symbols) when reckoning in the sand," but this writing in the sand has no connection with the abacus. The custom of making calculations in the sand still holds in India and Burma. "The Burman," says Sir R. Temple (Ind. Antiq. xx., 54, "writes either on the ground in the dust, or on black *parabaik* . . . In either case each calculation is erased when no longer required . . . They invariably rub out the results of each step as they proceed"; and, in a note to this remark, Mr. S. B. Dikshit writes: "Hindu astrologers use a wooden plank, which they cover with dust. This plank is called *pati*, hence arithmetic is called *patiganita* by Bhāskaracharya and others." We are told (Story of Arithmetic, p. 14) that the simplest form of the abacus consisted merely of a board with parallel grooves, or a tray containing sand, which could be readily grooved with the fingers." Hence the supposed connection. The Hindus simply use the sand for writing purposes and there is not the slighest evidence that they have ever effected their calculations by anything of the nature of an abacus. There has been a good deal of confusion between the terms 'abacus,' 'gobar' (powder), and 'writing in the dust.'

Bayley also states that Áryabhaṭa describes a mode of numeration based on the value of position and also that he made use of the same in extracting the square root. The former point has been disposed of above, while the latter will be dealt with in another place. It may be as well, however, to reaffirm emphatically that in Áryabhaṭa's notation the value of position was not recognized and that there is absolutely no evidence to show that he knew anything about it.

Among those points of evidence that have led to the belief in the Indian origin of modern notation, is the fact that the word 'Indian' has been attached to the system by some writers. In particular, we constantly hear that the tradition of an Indian origin existed among the Arabs. "Mais malheureusement," as Woepcke

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versal apparently from time immemorial." Has this statement any real foundation? I have made careful enquiries and have come across no evidence of the common use of the abacus in India.

wrote (Journ. Asiatique, 1863, 69), "la critique historique fait tellement défaut á la plupart des écrivains arabes, qu'on ne peut accepter qu'avec la plus grande réserve leurs assertions, lorsqu'il s'agit de faits dont ils n'ont pu avoir une connaissance certaine et immediate. Si donc nous finissons peut-être par nous décider pour une origine indienne des chiffres gobâr, ce ne sera pas parce qu'elle est explicitement affirmée dans deux des passages que l'on vient de lire." The first of these passages is an extract from a commentary on the Talkhis of Ibn Albanna, which relates that a Hindu (a man of the nation of Indians) took some fine powder, spread it on a table and made on it certain calculations and then put it away for future reference. This is followed by an interesting description in which the forms of the new symbols are likened to certain letters of the Arabic alphabet. Thus the numbers one to six, and nine, are likened to the following ·— ا ب ج عو ع ه و
The second passage referred to is also an extract from a commentary by Husain Bin M. Almahalli on a work by Abdul Kadir Alsakhwi and contains practically the same information. As Woepcke says, we cannot attach any value to such statements in themselves.

There is, however, with regard to the use of the adjective *Indian*, another point to consider. Taylor wrote . "The Arabians call the decimal scale of arithmetic Hindasi . . . a circumstance which clearly indicates the source from which they consider this manner of notation to have been derived." Woepcke, however, pointed out (p. 505) that "L'adjectif employé pour désigner le calcul *indien*, ou des méthodes *indiennes*, et qui est ordinairement *hindî* هندى, se présente . . . . sous la forme *hindacî* هندسى." It is this likeness between two words that has led to confusion and erroneous conclusions. One can understand the unlearned being misled by such resemblance, but it is just one of those points that scholars do not generally make a mistake about. Firuz-Abadi (1329-1414 A.D), the great philologist, gave the derivation of the word هند سه (hindasah) which he said was derived from the Persian word اندازه (andazah) which means *measure*. One would think that this was good enough authority, but it appears to be ignored by most of the Indianists, and whether the derivation given is right or hot does not matter at all, for it is absolutely certain that the word هند سه in the time of Al-Firuz-Abadi was used with a signification altogether different from *Indian*. Again in an episode of Firdausi's Shah-nama[1] the following passage occurs: "Who among the great will take charge of the son of the King of the world, and form his character? Will it be a Roumi (رومى), an Indian (هند ى) or a Persian; an astronomer or a geometer (هندسى), etc." Woepcke seems to think that this quotation disproves the derivation given by Firuz-Abadi,[2] but the significant fact remains that in the time of Firdausi the two words were used with totally different meanings—with meanings between which there was no alliance. M. Woepcke quotes another instance of the use of the word هندسی from Ibn Sina, the great philosopher (b. 980 A.D.). This example is interesting from several points of view, but primarily because it helps to disprove the conclusions of the Indianists. In a rule Ibn Sina gives relating to the properties of square numbers the phrase فی الطریق الهندسی occurs and in a corresponding rule for cubes the phrase الحساب الهندسي Now, if either of these rules could be traced to an Indian source one might be pardoned for translating هندسی by the term "*Indian*"; but there is not the remotest reference to any such rules or anything akin to them in any of the known writings of the Hindu mathematicians prior to Avicenna. Further, M. Woepcke says, "Si nous considérons que ce mot ne peut ici en aucune façon signifier 'géométrique,' sens qu'il a ordinairement, et si nous rappelons que le même mot *hindacî* désigne aussi chez les Arabes, d'apreś M. Taylor, 'l'échelle décimale de l'arithmétique,' nous devons être portés à admettre que le sens primitif du mot هندسی qui se prononce *hindiçah* et *handaçah* est 'méthode indienne' ou 'art indien'; et que, si ce mot désigne en arabe ordinairement, la géométrie, c'est parce que les premières notions de cette science arrivées aux Arabes sont venues de l'Inde" (p. 505).

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[1] Firdausi (941-1020 A.D.).

[2] Which, of course, it does not

M. Woepcke's conclusion depends upon the following (supposed) facts: (i) the word هندسی cannot by any possible means imply geometry in the passage referred to; (ii) a statement by Mr. Taylor; (iii) the Arabs owe their knowledge of geometry to the Hindus. It is only necessary to refer to the first of these points here. Of all the problems relating to numbers this very one is most likely of geometric origin, as a glance at the accompanying figure will show. AB is any square of which the sides are divided into nine equal parts. Of the larger squares which surround AB the dotted parts show the remainders on division by nine and Avicenna's proposition is at once seen to be true, *viz.*, that

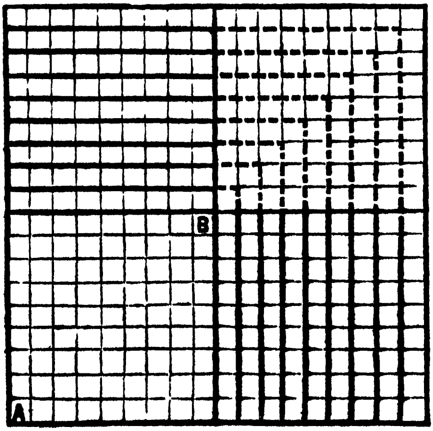

Fig. 1.

when on division by *nine* the linear remainder is 1 or 8, 2 or 7, 3 or 6, 4 or 5 the square remainders are respectively 1, 4, 9, 16 (*i.e.*, 7).[1] (Of course it will be at once seen that this is only a particular case of a more general proposition.)

An interesting anecdote is related by Bayley in the following quotation from Masaudi, who visited India at the close of the tenth century: "Un congrés des sages réuni par ordre du roi composa le livre du Sind Hind . . . . Ils inventerent aussi les neuf chiffres qui forme le systême numérique indien." Congresses and councils are not often known to *invent*, but it is quite conceivable that at such a meeting the *adoption* of a new system (possibly foreign) might be considered.

A similar anecdote is related about the Khalif Walid who reigned from 705 to 715 A.D. . . . It is stated that he forbade, by a special edict, the use of the Greek language in the public accounts. He made, however, a special reservation in favour of Greek letters as numeral signs, on the ground that the Arabic language possessed no numerals of its own. Now the Arabic *abjad* is exactly the same as the Greek alphabetic notation and it is "undoubtedly ancient" as Bayley states, and therefore the edict could *not* refer to the Greek alphabetic notation. There are only two possible conclusions, *viz.*, (*i*) the edict referred to some special notation of the Greeks (? the apices of the Neo-Pythagoreans); or (*ii*) the whole tale is false.

Such evidence as is contained in this section, being more or less legendary, does not carry very great weight. The points here dealt with would not, in all probability, have been taken up in the present argument if they had not been already used by the Indianists. Their value here lies in the rather remarkable truth that they help to prove just the opposite to the theory they were intended to support. It is disappointing that so-called historical evidence can avail so little in such an investigation as this. Even when we come to the records of such a reliable investigator as Albiruni, we find very little really pertinent to the question in hand. When he visited India (in the eleventh century) the new notation must have been fairly well established.[2] His language is not always perfectly unambiguous, but what he says leads us to conclude that the Hindus he came across *were ignorant of the fundamental principles of mathematics.* "At first," he writes, "I stood to their astronomers in the relation of a pupil to his master, being a stranger among them and not acquainted with their peculiar national and traditional methods of science. On having made some progress, I began to show them the elements on which the science rests, to point to them some rules of logical deduction and the scientific methods of all mathematics, and then they flocked together round me from all parts and most eager to learn from me, asking me at the same time from what Hindu master I had learnt those things, whilst in reality I showed them what they were worth, and thought myself a great deal superior to them, disdaining to be put on a level with them. They almost thought me a sorcerer . . . . You mostly find that even the so-called scientific theorems of the Hindus are in a state of utter confusion, devoid of any logical order."

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[1] A similar example is given by Theon of Smyrna, A.D. 130.

[2] Is the antiquity of the *abjad* so certain? What is the earliest epigraphical instance?

Albiruni's statements regarding Hindu mathematics and, in particular, about notation, must be read in the light of the above remarks. Also it must be borne in mind that in Albiruni's time the common notation in use in India was the 'numerical words' system, and among the Arabs probably the 'abjad' was the popular notation, although in both countries the modern notation was possibly well established.

"The Hindus," Albiruni says, "do not use the letters of their alphabet for numerical notation, as we use the Arabic notation in the order of the Hebrew alphabet.[1] As in different parts of India the letters have different shapes, the numeral signs, too, which are called *anka*, differ. The numeral signs which we use are derived from the fine forms of the Hindu signs.[2] Signs and figures are of no use if people do not know what they mean, but the people of Kashmir mark the single leaves of their books with figures which look like drawings or like Chinese characters, the meaning of which can only be learned by very long practice. However, they do not use them when reckoning in the sand." (Then follow three pages of disquisition on the *orders* of numbers on which he states he has written a treatise. He states that the Hindus "extend the names of the orders of numbers until the eighteenth order for religious reasons . . . . Some Hindus maintain that there is a nineteenth order . . . ., but in reality reckoning is unlimited). "The Hindus," he goes on to say, "use the numeral signs in arithmetic in the same way that we do. I have composed a treatise showing how far, possibly, the Hindus are ahead of us in this subject.[3] We have already explained that the Hindus compose their books in Slokas. If, now, they wish, in their astronomical handbooks, to express some numbers of the various *orders*, they express them by words used to denote certain numbers either in one *order* alone or at the same time in two orders[4] . . . . Brahmagupta says: "If you want to write *one*, express it by everything which is unique, etc." Albiruni gives a list of these numerical words and then says: "As far as I have seen and heard the Hindus, they do not go beyond twenty-five with this kind of numerical notation."

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[1] I take this to mean that they did use an alphabetic notation, but differing in the order of the letters from the 'abjad.' See notes above on Aryabhata's notation. But the passage is ambiguous.

[2] I do not see how he was in a better position to judge on this point than, say, Canon Taylor, who is certainly wrong in *his* conclusion

[3] Probably as regards the nomenclature of *orders*. In Dr. Lardner's Arithmetic (1834) we read, "The names (Sanskrit) for the successive orders of units is carried to a surprising extent" Mutahhar ibn Tahr notes as a curiosity a pretty high figure ascribed by Indians to the length of the world (*Huart* p. 29). This appears to have been the distinguishing characteristic.

[4] The Hindus applied the place-value to their numerical word system The Arabs kept their *abjad* unmodified. See my note above.

In Albiruni's list the following are the equivalents of 1 and 10, 2 and 20 :—

1.	**Ādi, çaçin, indus, śita, urvarā, dharā, pitāmah, candra, śitāmca, raçmi.**
10.	**Diç, āçā, kendu, rāvaṇaçara.**
2.	**Yama, Açvin, ravicandrau, locana, axi, Dasra, Yamala, pasca, netra.**
20.	**Nakha, kriti.**

V.

For operations involving large quantities the old notation (*i.e*, notations without place-values) were clumsy in that a large number of symbols were required[1] and there are certain problems that have no meaning, apart from the idea of place value. For instance the sum of the digits of ɣ θ ⌢ would be ɣ θ ⌢ and nothing else. Problems that involve such ideas as 'the sum of the digits of twenty-five is seven' connote the idea of place-value. The following well-known example given by Jamblichus (circ. 360 A.D.) is a distinct proof that he had perfectly clear ideas on the 'value of position.' "If the digits of any three be added together, and the digits of their sum be added together, and so on, the final sum will be six."[2] Jamblichus also tells us that the Pythagoreans called *ten* the 'unit of the second course, a *hundred* the 'unit of third course,' and so on.

In early Hindu mathematics we find no such problems as that given by Jamblichus. We can go further and state with perfect truth that, in the whole range of Hindu mathematics, there is not the slightest indication of the use of any idea of place-value before the tenth century A.D. Rodet, however, attempted to show that Āryabhaṭa's rule for the extraction of the square root implied a knowledge of the value of position.

The rule in question is as follows :—

भाग हरेद् अवर्गान् नित्यं द्विगुणेन वर्गमूलेन ।
वर्गाद् वर्गेशुद्धे लब्धं स्थानान्तरे मूलं ॥

"Always divide the part that is not square by twice the root of the square, after having subtracted from this squared part the square of the root: the quotient is the root to the next term.[3]"

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[1] The Hindus employed some 400 different symbols in their 'numerical word' notation. See Rice, etc.

[2] Gow's History of Greek Mathematics. Example: Take 25, 26, 27 of which the highest 27 is divisible by 3; then 2+5+2+6+2+7=24 and 2+4=6. The proposition can be made more general.

[3] Rodet translates the term स्थानान्तरे by 'à distance d'une place' or 'à intervalle d'une place ou d'un rang.'

The rule is algebraical in character, that is, it is perfectly general and applies to all possible notations. There is absolutely nothing in it that can lead one to suppose that it was meant to apply in particular to a notation with 'place-values' and a zero. The method given here was known to the Greeks and was admirably expressed by Theon of Alexandria while Euclid gave excellent geometrical solutions for the operation. Brahmagupta does not give any rule for the extraction of square roots, although he gives identically the same rule for cube roots as is given by Âryabhata. On turning to Rodet's notes we find the cause of his erroneous conclusions in the following statement. He says, "Pour rendre complètement intelligibles les expressions...dont Âryabhata fait usage dans ces règles, je vais reproduire un extrait des commentateurs de la Lîlâvatî .. et indiquant le procédé pratique suivi par les Indiens pour opérer l'extraction des racines." Of course, if one relies upon a commentator of the *Lîlâvati* for enlightenment as to the mathematical practice in the time of Âryabhata, wrong impressions are likely to result. As I have stated before, there is not in any part of Âryabhata's work the remotest indication of a knowledge of a notation with 'place-values'; on the other hand there is plenty of evidence in the opposite direction.

The use of the new notation is not indicated in the rules for the fundamental operations given by Brahmagupta; but there is one point about multiplication that is possibly worth noting. He says, "If the multiplicator be too great or too small the multiplicand is to be multiplied by the excess or defect as put; and the product of the multiplicand so put is added or subtracted." The commentator Kṛishṇa (sixteenth century A.D.) misunderstood[1] this rule which will be found in most modern textbooks and which must have been particularly useful with a notation without place-values.

In the absence of any detailed workings[2] of examples by the early Hindu mathematicians it would be difficult to come to definite conclusions regarding the notations they used if we had no other evidence. But fortunately there is plenty of other evidence that points to no uncertain conclusion. Sir R. Temple has, for example, shown us that the old ideas of notation still prevail, to a very great extent, among those in India who have *not* come in contact with foreign systems. This is, practically, the proof absolute that the new notation is not of Indian origin. The chief virtue of the new notation is, it is claimed, that it simplifies enormously arithmetical operations. Consequently we could not possibly give the credit of the invention to those who did not use it for the purpose for which it was invented. Sir R. Temple has shown us [Ind. Antiq. xx. 53f.] that both the old system of notation and the old methods of operation are still in use in Burma, India and Tibet. "To the present day," he writes, "the very crudest notions of arithmetical notation largely prevail in Burma . . . . thus :—1,000,100,30,9 is used to represent 1139. In Upper Burma mercantile accounts are frequently kept by the ordinary people in this way . . . . . This peculiarity yields a possible explanation of this system of arithmetic, which would appear to have arisen from this method of notation." Sir R. Temple explains that this system which employs the essentials of the old notation (with modern symbols) and the old methods of operation, and ignores the advantages of the modern notation, is that in use amongst the Phongyis or Burmese Buddhist priests and the astrologers—amongst those who have not been educated on a foreign plan. Sir R. Temple also says: "Mr. S. B. Dikshit informs me that a system of arithmetic nearly corresponding[1] to that of the Burmese is still, he believes, in vogue all over India among Hindu astrologers. A Lama showed Sir R. Temple that the system taught him in the indigenous monastic schools in Tibet was much the same.

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[1] Such misunderstandings are extremely common among the Hindu commentators.

[2] "This omission is still the characteristic of the unskilful worker in arithmetic, who will, if possible, show up the question and answer; but from a noble scorn of details, or a desire to keep secret the mysterious process omits the steps of the work and gives no inkling of the method." *The Story of Arithmetic*—S. Carrington.

I have been informed that in purely indigenous schools of the present day it is common for the pupils to learn their multiplication tables up to 100 × 100, and, until a short time ago, in the Government schools of the United Provinces, the pupils were compelled to learn at least up to 40 × 40. Mr. H. Sharp in his "Rural Schools in the Central Provinces" tells us that children not only learn the multiplication table as far as 100 × 100, but tables of squares even higher. "I have found," he says, "a very small boy who could tell without a moment's hesitation, the square of any number up to 1,000." This enormous range of tables was a necessary concomitant of the old notation and its survival is a curious phenomenon.

In a recent work[2] we read that in the section entitled *Algorithims* of Brahmagupta's mathematics: "We have undoubtedly the numeration and notation of the Hindu (*i.e.*, our own) system given and perhaps explained." Further on we read: "In the twelfth century Bhāskara composed a fuller and more valuable work (than Brahmagupta's) on arithmetic," and, "undoubtedly, there was a race of scholars during the intervening centuries (between Brahmagupta and Bhaskara) to whom was due the maintenance, if not the extension, of Hindu learning . . . Thus (through M. Bin Musa) the mathematical writings of the Hindus became known to the Arabians and especially the wondrous system of notation 'having nine digits and a cipher, with device of place.'" I give these quotations, which are severally untrue, from this particular work (otherwise valuable and interesting) partly to illustrate the popular misconceptions of the subject of Hindu mathematics and their influence, and partly as pegs on which to hang some ideas.[1] Those who are really familiar with the works in question must agree with Chasles, who wrote long ago: "L'ouvrage de Bhâscara n'est qu'une imitation très-imparfaite de celui de Brahmagupta, qui y est commenté et dénaturé . . . . Les propositions les plus importantes de Brahmagupta . . . . y sont omises, ou énoncées commes inexactes . . . . Cette circonstance et les commentaires de différens scoliastes, nous paraissent prouver que, depuis Brahmagupta, les sciences, dans l'Inde, ont été en déclinant" (p. 420). The significance of these statements, regarding the verity of which there is not the slightest doubt, is great. We are led to suspect, but not only by these considerations, that there never was a school of Hindu mathematicians. Further, if Bhāskara and the other commentators were not competent enough to appreciate Brahmagupta's work, it suggests the idea that, perhaps, Brahmagupta himself was of the same type as his successors.

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[1] The differences are minor and do not affect the present question

[2] *The Story of Arithmetic*—S. Carrington

Colebrooke says that Âryabhaṭa was superior to any Hindu who came after him and that deterioration rather than advancement took place since the time of the more ancient author (p. 9).

Wherein, then, does the reputation of Brahmagupta lie? In the early part of the last century it was stated that his formula (the correct one) for the area of the triangle was the earliest known citation of it. Consequently it was assumed that Brahmagupta was the discoverer of this useful formula. But, as was found out later on, the formula in question was known to Heron the Elder (2nd century B.C.) and was demonstrated by him. Still the reputation sticks. Moreover, Chasles thought that the priority of the statement of the same formula extended to quadrilaterals rests with Brahmagupta, but it is even doubtful whether the rule given was intended to apply to quadrilaterals at all. Certainly the commentators thought it did, but they did not understand its application. Kṛishṇa's illustrations are ludicrous, while Bhāskara did not understand that the formula applies to cyclic quadrilaterals only and said[2] that anyone who believed in it was a "blundering devil."

Side by side with this correct formula for the triangle, Brahmagupta states that the product of half the base and half the sum of the other sides is the gross area of a triangle. That a mathematician should state such a crude proposition is inconceivable. It is, indeed, given by Bœthius[3] and Bede, but no one sets either of these up as mathematicians: they are recognised as mere compilers where mathematics is concerned. According to Chasles this erroneous formula that is given by Brahmagupta (7th century), Bœthius (5th century), and Bede (7th century) must have a common origin.

The next proposition by which Brahmagupta gains credit is a rule he gives for the construction of right-angled triangles with rational sides. This rule he gives twice over without knowing it; first in paragraph 35, section iv., chapter xii., and again in paragraph 38 of chapter xviii. (Colebrooke's edition). In the first case he gives directions for the construction of 'half a rectangle' and in the second for an isosceles triangle (a double right-angled triangle). The two rules are mathematically identical but worded very differently. The only possible explanation of their occurrence appears to be that Brahmagupta took them from two different works which he used for his compilation. The rule in question is a generalisation of the two rules that Proclus attributes to Pythagoras and to Plato; and had always been a proposition particularly interesting to the Greeks.[1] That Brahmagupta was the original generaliser is altogether improbable; no one familiar with his mathematics could possibly conceive it unless, like Chasles, they had been misled by Colebrooke and others. As a matter of fact the formula was given by Alkharkî the translator of Diophantus.

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[1] It must be remembered that the writer of this interesting book is not to blame for the incorrect statements regarding Hindu mathematics. For similar errors, see Cantor, Gow, etc., etc.

[2] Banerji's edition, p. 95.

[3] And also by Ahmes the Egyptian B.C. 1700.

Next come the 'indeterminate' or Diophantine equations. The connection between Brahmagupta and Diophantus was discussed by Colebrooke but not from the most enlightened point of view. We now know that Diophantus lived prior to Brahmagupta; that his favourite subject was indeterminate equations of the second degree; that parts of his works were lost; that his mathematical work was carried on by Hypatia and others. Brahmagupta gives us numbers of indeterminate equations; he gives a method of solving quadratics the same as that employed by Diophantus, while the other method he gives is practically the same as that of Nonius; he uses the sexagesimal notation and many Greek mathematical terms, and it can be stated with perfect accuracy that no section of mathematics is touched upon by him that had not been dealt with by the Greeks.[1]

VI.

In the work quoted above it is intimated that M. ibn Musa, and through him the Arabians generally, derived their mathematical knowledge from the Hindus. Gow[2] also states that "in the time of Al-Mansur (754—775) the Arabian commerce with India had brought to the knowledge of Bagdad the Siddhanta. This also was translated and the Arabs acquired the numerical symbols." On what authority such statements are made I cannot say, but I suspect they may be traced back to Colebrooke, who, however, is not quite so culpable in this matter as *his* commentators Colebrooke states that M. ibn Ibrahim Alfarazi translated or adapted an Indian work on astronomy, and this work of Alfarazi was known as Sind-hind or Hind-sind. "It signifies," he says,

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[1] The conclusions given in this section are based upon a much fuller investigation than is here indicated: it is proposed to give, on another occasion, a more detailed exposition of the results of this investigation.

[2] History of Greek Mathematics.

"according to Ben-al-Adami, the revolving ages . . . . No Sanscrit term of similar sound occurs, bearing a signification reconcilable to the Arabic interpretation. If a conjecture is to be hazarded, the original word may have been Siddh'anta. Other guesses might be proposed."

"L' identité du mot *Sindhind* avec *sidd'ânta* que Colebrooke a été le premier a soupçonner," writes Woepcke, "n'est plus, je pense, révoquée en doute par personne," and concludes that the Indian astronomer who arrived at Bagdad in 773 A.D. had based his work on that of Brahmagupta, and so Colebrooke's guess becomes a certainty. In all probability Brahmagupta's work was translated into Arabic at an early date, but that, for example, M. ibn Musa learnt his algebra from the Hindus does not follow and neither is it true. The argument given by Cossali and followed by Colebrooke for an Indian origin of M. ibn Musa's mathematical work is curious enough to be quoted. It runs as follows:—"There is nothing in history respecting Muhammad ben Musa individually, which favours the opinion, that he took from the Greeks the Algebra which he taught the Muhammadans. History presents in him no other than a mathematician of a country most distant from Greece and contiguous to India . . . . Not having taken Algebra from the Greeks, he must have either invented it himself or taken it from the Indians. Of the two the second appears to me most probable." Is it surprising that scholars who believed in, or even listened to, such arguments came to unsound conclusions?

A comparison between the mathematical work of Brahmagupta and M. ibn Musa proves without a shadow of a doubt that the Muhammadan's work is *not* based upon that of the Hindu.[1] Rosen, however, misled by Colebrooke, and his own inclination possibly, seemed to think just the opposite. In this translation of M. ibn Musa's work he often refers to Brahmagupta and Bhāskara in disparagement of the Muhammadan. Now M. ibn Musa, in the preface to his work, writes:—

"The learned, in times which have passed away, and among nations which have ceased to exist, were constantly employed in writing books on the several departments of science . . . . The fondness for science, by which God has distinguished the Imam al Mamum . . . . has encouraged me to compose a short work on calculating . . . such as men constantly require." This does not point to India as the source of his mathematical knowledge, but to a nation or nations that had ceased to exist. Rosen, however, says, "I have drawn the conclusion that part of the information comprised in this volume was derived from an Indian source." That he was not entitled to draw any such conclusion is evident from an examination of the facts. It will even be seen that the evidence selected by him in support of his arguments actually points the other way. For example, he attempts to show that in the determination of the ratio of the circumference to the diameter of the circle, the Arabian mathematician has copied the Hindus. The result given by the Muhammadan may be represented by $p=d \times \frac{62832}{20000}$, while the result as given in the Lilāvati is represented by $p=d \times \frac{3927}{1250}$. The fact that these two results are identically equal forms the basis of Rosen's argument to prove that M. ibn Musa copied from the Hindus,[1] notwithstanding that M. ibn Musa lived three hundred years before the Lilāvati was composed. Now, as Chasles says, "La vérité, en Géométrie, est la loi commune, elle est une, elle appartient à tous les temps, à toutes les intelligences qui savent la comprendre ; et sa présence sur plusieurs points, chez plusieurs peuples, n'est pas une preuve de communications entre eux" (p. 430) ; but Rosen thinks otherwise and says, "It is extremely improbable that the Arabs should, by mere accident, have the same proportion as the Hindus ; particularly, if we bear in mind that the Arabs did not seem to have troubled themselves about finding an exact method." He adds to this astonishing comment the following still more astonishing foot-note[2] : "This would appear from the very manner in which our author (M. ibn Musa) introduces the several methods ; but still more from the following marginal note of the manuscript to the general passage. 'This is an approximation, not the exact truth itself : nobody can ascertain the exact truth of this, and find the real circumference, except the Omniscient . . . . This is called an approximation, in the same manner as it is said of the square-roots of irrational numbers, that they are approximations, and not exact truths : for God alone knows 'what the exact truth is.' "

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[1] Rodet also came to this conclusion (Journal Asiatique, 1878).

The remarks of Rosen about it being mere accident, and the Arabs not troubling themselves, are too absurd to be considered ; and, as to the note he ridicules, I venture to state that in the whole range of Hindu mathematical writings nothing approaching such a clear exposition of a difficult point has been given.[3] The facts referred to by Rosen further prove the ridiculousness of his arguments. They are here given side by side, and a glance will show that accurate results were given by the Muhammadan some three centuries earlier than by the Hindus in question, and that he could not have possibly borrowed his results from them. It is not necessary here to take into account the value given by Âryabhaṭa as Brahmagupta, on whose work that of M. ibn Musa is said to be based, did not give it. The point at issue lies between M. ibn Musa, Brahmagupta and Bhāskara.

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[1] It is to be borne in mind that it is only Rosen's arguments that are here being confuted. Rosen knew nothing of Âryabhaṭa.

[2] Of course such arguments are not, in themselves, worth repeating. It is on such, however, that the current theories are based.

[3] Since writing the above it has struck me that Rosen possibly believed that the circle could be exactly 'squared.' Such a belief was not uncommon in his day.

Brahmagupta (*circ.* 600 *A.D.*)

The diameter and the semidiameter being severally multiplied by three are the practical circumference and area. The square root extracted from ten times the squares are the neat values.

Bhāskara (*circ.* 1150 *A.D.*)

Rule: When the diameter of a circle is multiplied by three thousand nine hundred and twenty, and divided by twelve hundred and fifty, the quotient is the circumference: or, multiply by twenty-two and divide by seven, it is the gross circumference adopted to practice.

M. ibn Musa (*circ.* 800 *A.D.*)

In any circle, the product of its diameter, multipled by three and one-seventh, will be equal to the periphery. This is the rule generally followed in practical life. The geometricians, have two other methods. One of them is that you multiply the diameter by itself, then by ten, and hereafter take the root of the product: the root will be the periphery. The other method is used by astronomers: it is this, that you multiply the diameter by 62832 and then divide the product by 20000: the quotient is the periphery.[1]

[*Note.*—There is another and more interesting reference to the 'squaring of the circle' in Hindu writings given by Dr. Thibaut in his translation of the Sulvasutras. It is the following rule:—

"If you wish to turn a square into a circle, stretch a cord from the centre towards one of its corners, draw it round the side and describe the circle together with the third part of the piece standing over; this line gives a circle exactly as large as the square; for as much as there is cut off from the square (*viz.*, the corners of the square) quite as much is added to it (*viz.*, the segment of the circle lying outside the square.")

This gives $\pi = 3{\cdot}0886$. The construction arose out of the custom of building altars of different shapes but of equal areas, which has a very strange resemblance to the celebrated Delian problem.]

The ratios used by the Hindus have no claim to priority. Ahmes (*circ.* 1700 B.C.) gave a value equivalent to $\pi = (16/9)^2 = 3{\cdot}1604$. Archimedes gave a rigorous proof showing that the value lies between 22/7 and 223/71 Ordinarily he used, as we do now, 22/7. Ptolemy's value is 377/120 which equals 3·141666. Pulisa gave $3\frac{177}{1250} = 3{\cdot}1416$. The method of Ahmes is not unlike that given in the Sulvasutras. M. ibn Musa finds the area of the circle by treating it as the limit of an equilateral polygon of many sides: this method certainly does not point to Brahmagupta as the source of his knowledge.

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[1] $\sqrt{10} = 3{\cdot}1623$; $3\frac{1}{7} = 3{\cdot}1429$; the other values give $\pi = 3{\cdot}1416$. Âryabhata's value is $3\frac{177}{1250} = 3{\cdot}1416$. In practical applications Brahmagupta and Bhāskara use the value $\pi = 3$, while Âryabhata is widely erratic in one of the problems attacked by him that requires a knowledge of the value of π. Albiruni states that the value $3\frac{177}{1250}$ was employed by Pulisa (*India*, i., 168).

VII.

Not many years ago the opinions of the early orientalists appeared to be corroborated to some extent by the discovery of the Bakhshâli manuscript, or rather by Dr. Hoernle's statements regarding the manuscript; but, when it is understood, that Dr. Hoernle's conclusions were based upon false premises, it will be seen that there are other possible explanations than those he gives.

Now, in his discussion on the age and origin of the Bakhshâli arithmetic, Dr. Hoernle makes the following assumptions:—

"That Indian arithmetic and algebra, at least, are of entirely native origin." (Ind. Antiq. xvii., 37).

"That the Hindus did not get their elements of the arithmetical science from the Greeks." (ib.)

"That this principle (of value of position) was known in India as early as A.D. 500." (Ind. Antiq. xii., 37).

From such assumptions he finally concludes that the work is a very ancient one of purely Hindu origin, and even suggests that it helps to prove the early use of the modern system of notation among the early Hindus. He protects himself from giving a rather crude illustration of the vicious circle by a qualifying clause, but, in actuality, that is the form of his reasoning.

In addition to the statements given above, Dr. Hoernle writes, "The MS. is written in the so-called Sarada characters, which are still used in Kashmir and which, as they occur on the coins of the Maharajas of Kashmir, are of a not inconsiderable age. . . . . I have not observed these (some of the forms of letters) in other MSS. written in the Sarada characters. Hence I am inclined to look on them as evidence of great age in the Bakhshâli MS.; and as the West Indus Districts were early lost to Hindu civilization through Muhammadan conquests, during which it was a common practice to bury MSS. to save them from destruction . . . . The Bakhshâli MS. may be referred to the 8th or 9th century A.D. . . .

"The methods (of setting out the problems, etc.) differs considerably from that used in other Hindu mathematical treatises, *e.g.*, in those of Bhâskara and Brahmagupta . . . . "This negative sign is the most remarkable difference between the Bakhshâli MS. and the works of Bhâskara and others. The MS. uses a cross +, while the sign that is commonly used is a dot, placed above the quantity . . . . Here, therefore, there appears to be a mark of great antiquity. As to its (the +) origin I am unable to suggest any satisfactory explanation. I have been informed by Dr. Thibaut[1] . . . . that Diaphantus used the letter ψ reversed (thus ⋔) to indicate the negative quantity . . . . Now the Bakhshâli arithmetic is written in the Ṣloka measure; and this circumstance carries its composition back to a time anterior to that change of literary fashion in the 5th century A.D.[2] . . . . Again the foreign terms dinara (Latin *denarius*) and dramma (Greek *drachme*) occur in both (*i.e.* also in Brahmagupta) . . . . the decimal system of notation[3] is employed . . . etc., etc." Notwithstanding Dr. Hoernle's conclusion every one of these points seems to me to emphasize the fact that this work is *not* of pure Indian origin: clearer evidence for a non-Indian origin could not be given.

Further, Dr. Hoernle has failed to note on one most important matter. He explains that a mixed number is shown in the Bakhshāli MS. by placing 'the three numbers under one another; thus $\begin{matrix}1\\1\\3+\end{matrix}$ means $1-\frac{1}{3}$ and $\begin{matrix}4\\1\\2\end{matrix}$ means $4\frac{1}{2}$, but he does not explain that this mode of writing fractions is peculiarly Arabic.[4] That the Bakhshâli MS. exhibits such characteristic difference from the old Hindu treatises; that the only points of resemblance are admittedly of foreign origin[5]; that the MS. was found in that part of India that was dominated at the time when it was written by a foreign race; and that this foreign race was, at the period in question, superior to the Hindus as regards their knowledge of mathematics; these points also indicate pretty certainly that the work in question was *not* of unalloyed Indian origin.

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[1] Is it possible that Dr. Hoernle had not read the introduction to Colebrooke's *Lilavati?* (p. xii., Ed. 1817). Colebrooke there gives a full explanation of the use of the inverted ψ by Diaphantus).

[2] Is this sound argument?

[3] That is, the modern system with place-values.

[4] Woepcke, p. 497.

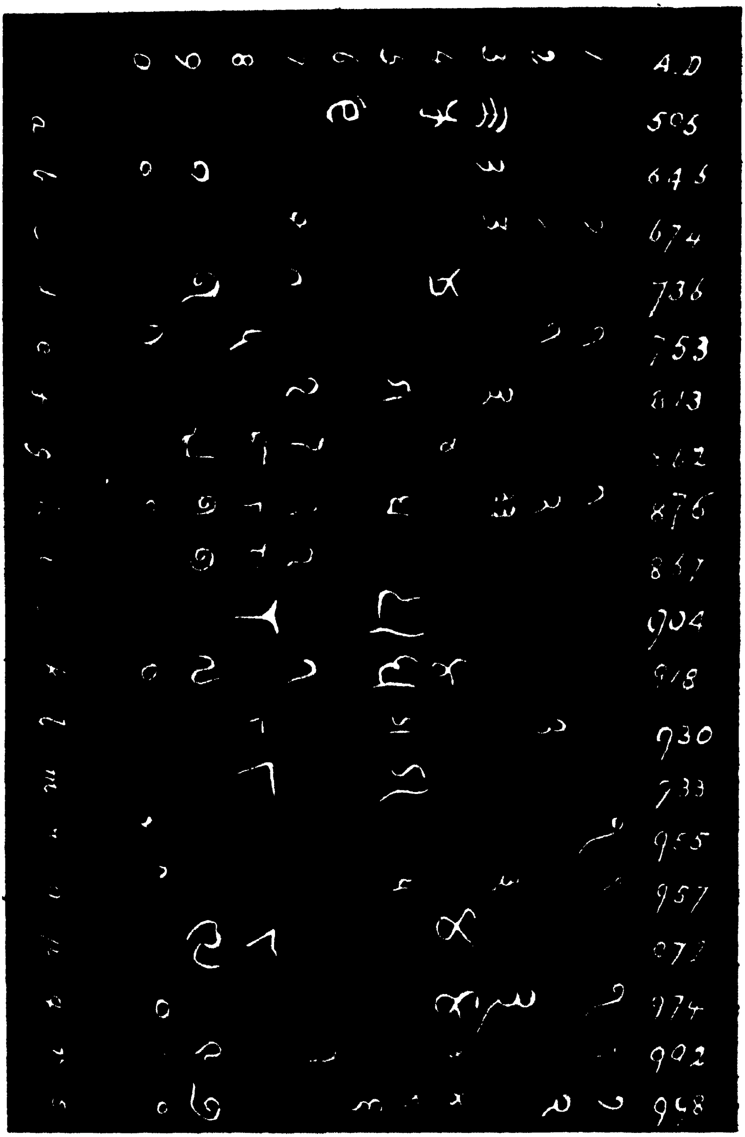
[5] The only resemblance between the matter of the Bakhshâlî manuscript and Brahmagupta's work, that Dr. Hoernle points out, lies in the fiftieth sutra of the MS. and ch, xviii. §84 of Brahmagupta's algebra. Peculiar significance attaches to this problem, for it was fully dealt with by Diophantus and fully expounded in the algebra of Alkarkhi which was based on that of Diophantus (Woepcke's *Extrait du Fakhri*). The problem given in the Bakhshâlî MS. may be expressed in modern notation thus:—Solve $x+5=m^2$, $x-7=n^2$ (not as Dr. Hoernle puts it—$x+5=s^2$, $x-7=s^2$). Alkarkhi gives at least four problems of the same kind and a great number of allied types. The solution given in the MS. is as follows:—"The sum of the additive and subtractive numbers is 12; the half of it is 6; lessened by two is 4; its half is 2; its square is 4; this is added to the subtractive number and becomes 11. This is the number." This solution is based upon the fact that $\frac{1}{4}\left\{\frac{a+b}{p}-\;\right\}^2$ $+(a+b)$ is a perfect square. This formula is given by Alkarkhi (p 63). In the present case $a=5$, $b=7$ and $p=2$.

This rather remarkable coincidence unmistakably points to Diophantus as one of the ultimate sources of both Brahmagupta's work and the Bakhshâli arithmetic.

VIII.

I have indicated roughly the main points of my arguments by which, I believe, my original proposition is proved. The task I set myself was to show that the current conceptions as to the origin of our modern arithmetical notation have not very secure foundations and that the question is worth reopening; and further, that popular misconceptions of the range and influence of Hindu mathematics need some correction. The second part of my task is only indicated in the above notes, which I may supplement later on, but as regards the question of notation I think enough has been said to cause those interested and better qualified to judge than I to reopen or, perhaps rather, to restate the question. The character of the Indian scripts; the evidence of inscriptions; the nature of the early notations in use among the Hindus; the nature of their mathematical works; the very custom at the present time among those Hindus who work on purely indigenous lines point to a foreign origin of the modern notation as probable; while the foundations of the arguments of those who believe in an Indian origin are now shown to be either absolutely unsound, or, when not absolutely unsound, at least unreliable; and consequently the Indian theory, if it is to stand, must be restated.

TABLE I.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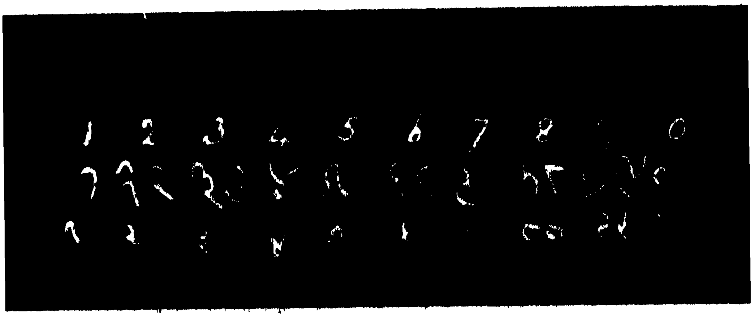
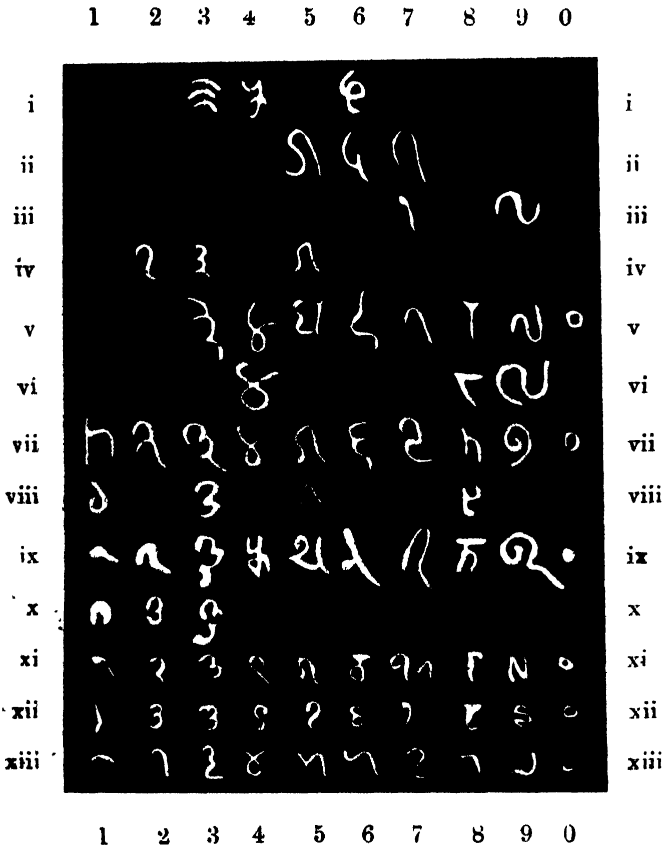
(*a*) E.I. ii., 20; (*b*) J. Asiatique 1863; (*c*) ib.; (*d*) I A. xii., 155; (*e*) I.A. xi., 110; (*f*) E.I. iii., 54; (*g*) E.I. iv., 310; A.S x.; (*h*) E.I. i., 159; (*i*) E.I. vi., 287; (*j*) I.A. ii., 257; (*k*) I.A. xvi., 174; (*l*) E.I. vii., 3; (*m*) I.A. xii., 249; (*n*) E I. i., 184; (*o*) E.I. ii., 124; (*p*) I.A. xii., 264; (*q*) E.I. ii., 119; (*r*) E.I. i., 77; (*s*) E.I. iii., 271; I.A. xvi., 202.

TABLE II.



(i) From a doubtful inscription of A.D. 1069. Ind. Antiq. xii., 202. (ii) inscription of A.D. 1114, Epigr. Ind. i., 34.

(Table III. from Bühler.)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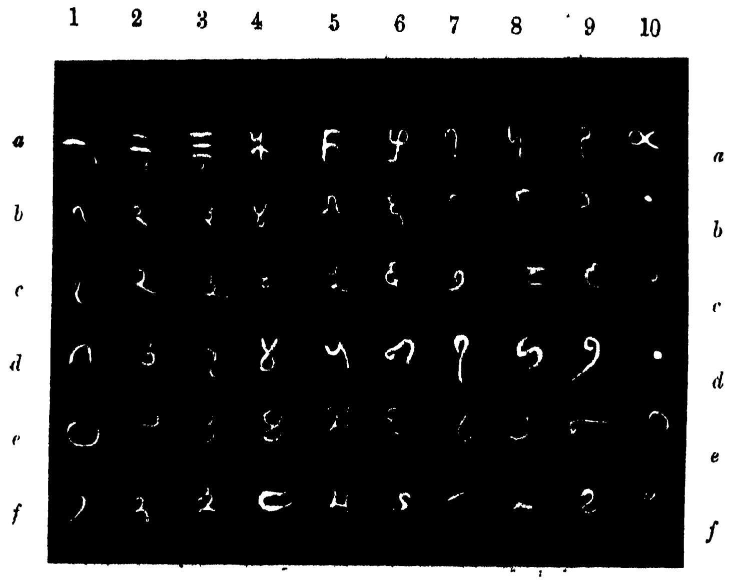
(i) This is the same as (*a*) in table i. (ii) Same as (*e*) table i. (iii) Kanheri inscription, see notes 11 and 12 above (iv) The Torkhêde inscription, same as (*f*) in table i. (v) Same as (*j*) and (*k*) except for the 'three,' the 'six,' for which the reference appears to be wrong. (vi) Same as (*p*) table i. (vii) Given in line 1 of table ii., A.D. 1050. (viii) Fourteenth century A.D., Ind. Antiq. x., 342. (ix-x) Bakhshâli MS.—same as (*e*) table v. (xi-xii) Bendall's Catalogue of Cambridge MSS. (xiii) B.E S.I.P. Telugu and Canarese, 11th century A.D.

TABLE IV.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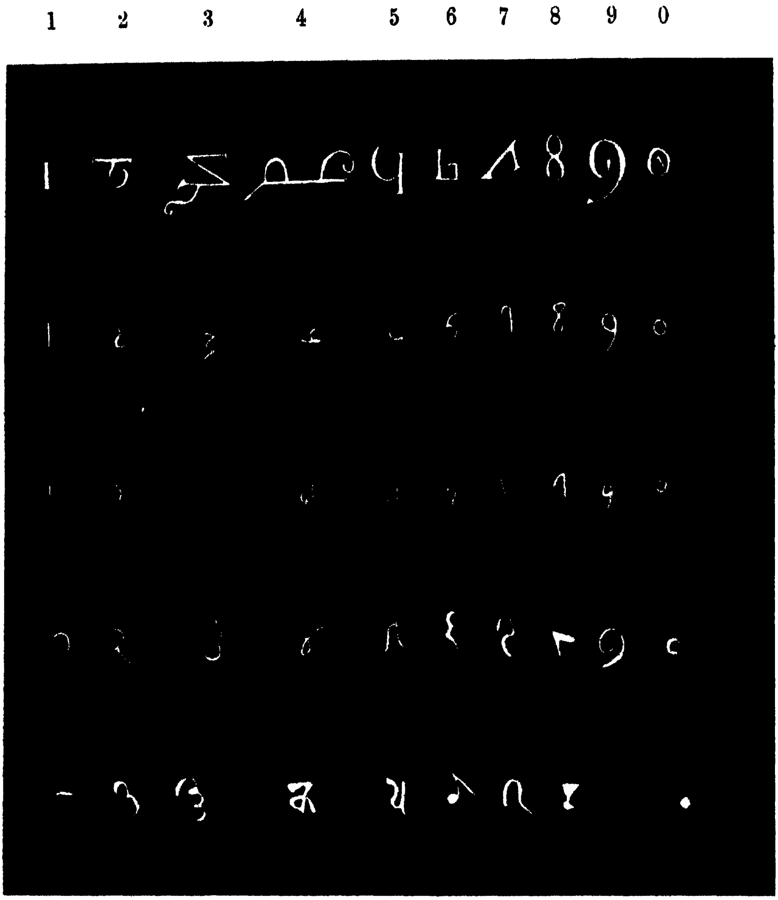
(*a*) Old Indian, Brahmi or 'numerical' symbols. Many variations of the 6, 8 and 9 have been given. They are probably all doubtful. (*b*) Indian ('new notation') 1114 A.D. (Epigr. Ind. i., 34). (*c*) Modern Nâgri. (*d*) Modern Thankari (Panjab). (*e*) Telugu. (*f*) Tibetan.

TABLE V.



(*a*) Apices of Boethius (Friedlein, p. 397).
(*b*) Gobar figures of the 10th century (Woepcke).
(*c*) Arabic figures from a MS. from Chiraz of the 10th century (Woepcke).
(*d*) Indian figures from a plate of the 11th century.
(*e*) Indian figures from the Bakhshâi MS.

54. Note on the History of the Caste System.

By A. M. T. Jackson, I.C.S.

It is well known that, whereas the Hindu lawbooks recognise no more than four castes, the number of castes actually existing is practically infinite. Many attempts have been made to account for this divergence between theory and practice, but none of the solutions that have been suggested has gained general acceptance. The subject attracted the attention of Colebrooke, for though he never published his views during his lifetime, he left behind him the heads of a memorandum on the matter, which have been printed in his biography (pp. 98 ff). He wrote that "the tribes (by which he means the four great castes) necessarily had an internal government; at the same time professions were naturally formed into companies. From this source, while the corporations (trade gilds) imitated the regulations of tribes (castes), a multitude of new and arbitrary tribes (castes) sprang up, the origin of which, as assigned by Menu, etc., is probably fanciful." The two significant points here are—(1) the stress laid on the internal government of the castes, and (2) the importance of the gilds for the history of the caste system.

The question slept where Colebrooke left it until it was taken up again by Senart after his visit to India in 1894 (*see* his Les Castes Dans L' Inde). He holds that the so-called castes or *varṇas* of the lawbooks are really classes, which have always been divided into numerous sections similar to the endogamous sub-castes of the present day. Jolly (Die Entstehung des Kastenwesens, Z.D.M.G., l. 507 ff) has adopted Senart's theory and furnished it with further illustrations. Neither writer, however, accounts for the existence of a theory so much at variance with the practice. Risley (Census of India Report 1901, pp. 548-9) assumes that the Indians borrowed the theory of the four classes from Persia. Oldenberg on the other hand (Zur Geschichte des Indischen Kastenwesens, Z.D.M.C., li., pp. 267 ff) believes that the old Indian theory of four castes was at first a true representation of the actual state of things, and that the multiplication of castes was a gradual process, favoured in some cases by the transformation of trade guilds into castes. In this latter view, as we have seen, he was anticipated by Colebrooke.

The point, however, to which I wish to invite attention at present, is Colebrooke's other leading idea, of the importance of the internal government of the castes. At the present day we find that the castes enforce their rules in various ways, though the ultimate sanction is in all cases expulsion from the caste, the social consequences of which are like those of the Roman *interdictio aquâ et igni*. The machinery by which the sentence is passed may be either a general meeting of the caste, or the decree of a committee of elders, or of an hereditary headman, or the *fiat* of a spiritual teacher. The existence and action of these authorities is practically ignored by our Government, as it was also by the Muhammadan kings for the most part. But when we go back to the days of independent Hindu rule, we find a very different state of things. In those days, Indian society consisted of a hierarchy of castes, at the head of which stood the Brahmans and the king, and the royal authority was constantly called in to keep each caste to its proper functions, and to prevent what the lawbooks technically call *Varṇasaṅkara* or confusion of castes. In other words, the power of the king was the ultimate sanction for the enforcement of caste rules. Thus we find in the Vishṇu Smṛiti (III. 1-3): "Now the dutie "of a king are to protect his people, and to keep the four "castes and the four orders in the practice of their several duties." Likewise Vaśishṭha says (XIX. 7-8, Oldenberg's translation): "Let the king, paying attention to all the laws of countries (sub-"divisions of) castes (*jāti*) and families, make the four castes "(*Varṇa*) fulfil their (respective) particular duties. Let him "punish those who stray from (the path of duty)"; and again (Ib. I 39-41): "The three (lower) castes shall live according to "the teaching of the Brāhmaṇa. The Brāhmaṇa shall declare "their duties and the king shall govern them accordingly." So "also Gautama says (VIII. 1. Oldenberg's translation): "A king "and a Brāhmaṇa deeply versed in the Vedas, these two uphold "the moral order in the world"; and again (Ib. XI. 9-10): "He "(the king) shall protect the castes and orders in accordance with "justice; and those who leave (the path of) duty, he shall lead "back (to it)"; and also (Ib. XI. 31): "The advice of the spiri-"tual teacher and the punishment (inflicted by the king) guard "them." The passage last quoted has a close parallel in Manu (VII. 15, Bühler's translation) who says: "Through fear of him (pun-"ishment), all created beings, both the immovable and the movable "allow themselves to be enjoyed and swerve not from their duties." The parts allotted to the spiritual guide and to the king in the enforcement of caste rules are explained by Āpastamba [II. V. (10) 12 ff], who says that if those who have broken caste rules fail to perform the penance prescribed by their spiritual guide, he shall take them before the king. The king shall "send them to his "domestic priest, who should be learned in the law and the science "of governing. He shall order (them to perform the proper penan-"ces if they are) Brāhmaṇas. He shall reduce them (to reason) by "forcible means, excepting corporal punishment and servitude. "In the case of (men of) other castes, the king, after having ex-"amined their actions, may punish them even by death."

The natural result of this exercise of the royal jurisdiction in caste questions would be the gradual establishment of a body of caste customs; and if a caste lived in an area so extensive as to be subject to more than one political jurisdiction, it would tend to split up into sections whose customs differed in detail, owing to the divergent decisions of the kings to whom it was subject. Thus the customs of the Brahmans of Kośala would differ in detail from those of the Brahmans of Magadha, and so on. Now, the political condition of ancient India was such as to favour in a high degree this splitting up of the original castes, for, as far back as our knowledge goes, we find the country divided into small tribal kingdoms. Megasthenes (B.C. 300), as reported by Arrian, had before him a list of 118 of these, covering the whole area of India. The Buddhist scriptures show us the same state of things existing at an earlier date (*see* Oldenberg's Buddha, 1897, Exc. 1, and Rhys David's Buddhist India) and we can follow it still further back as far as the Ṛigveda itself (*see* Zimmer, Alt Indisches Leben). As Prof. Macdonell says (Sanskrit Literature, 157-8): ". . . . the Vedic "Aryans were split up into numerous tribes, which, though con- "scious of their unity in race, language and religion, had no political "cohesion. They occasionally formed coalitions, it is true, but "were just as often at war with one another. The tribe, in fact, "was the political unit, organised much in the same way as the "Afghans are at the present day, or the Germans were in the "time of Tacitus." Each tribe, being under a different king, would tend to diverge from all the others in the matter of caste customs, owing to the different jurisdiction to which it was subject. The tribal kingdoms did not lose their identity even if they were conquered and incorporated into larger empires, for it was the Indian custom to place on the throne of a conquered province a member of the old royal family. For instance Manu says (VII. 201-3, Bühler's translation): "When he has "gained victory, let him duly worship the gods, and honour righte- "ous Brāhmaṇas, let him grant exemptions, and let him cause pro- "mises of safety to be proclaimed. But, having fully ascertained the "wishes of all the (conquered), let him place there a relation of the "(vanquished ruler on the throne) and let him impose his condi- "tions. Let him make authoritative the lawful (customs) of the "(inhabitants), just as they are stated (to be), and let him honour "the (new king) and his chief servants with precious gifts." Similarly the Vishṇu Smṛiti says (III. 47-9, Jolly's translation): "A king, having conquered the capital of his foe, should invest "there a prince of the royal race of that country with the royal "dignity. Let him not extirpate the royal race, unless the royal "race be of ignoble descent." The passage from Manu, in particular, shows most clearly that the jurisdiction in caste questions remained unaffected by foreign conquest.

But it may be asked, if the multiplication of castes dates back as far as the days of the old tribal kingdoms, how is it that so few of the existing sub-castes are mentioned in Indian literature? The answer is that the name of the sub-caste is used only when it has to be distinguished from another sub-caste. Thus, a writer living at Kanauj naturally speaks of a Kanaujiya Brahman as a Brahman simply, just as a writer in England might speak of an attorney as a lawyer, while a writer in Scotland might use the same word for a "writer to the signet." In the Census Reports it is often found that that portion of a sub-caste, which is still settled in its original home, returns itself under the caste name only, *e.g.*, as Brahman only or as Banyā only, without giving the sub-caste name at all, so that it might seem as if the sub-caste did not exist at all in the very place which is known to be its chief centre.

It is well-known that a very large proportion of the sub-castes bear geographical names. It remains to consider whether any of these names are derived from the names of historical Hindu kingdoms. The following examples are enough to show that the question deserves special study:—

Maithil, the name of the Brahman sub-caste of North-Bihar, is derived from the ancient kingdom of Mithilā or Videba, well known in the Brāhmaṇas and in the Rāmāyana.

Jijhotiyā, a Brahman sub-caste in Central India, takes its name (as Gen. Cunningham pointed out) from Jijākabhukti, the territory of the Chandels of Mahobā.

Āgarwāl, a strong Bania sub-caste in Upper India, has a pseudo tradition that Agra or Agroha was their original home, but their true birthplace seems to be Āgar in Eastern Mālvā, which was well known as Ākara about the Christian era, and is named in inscriptions as a province along with Avanti (Ujjain).

Kheḍāvāl is the name of a sub-caste of Brahmans and of another of Banyās in Gujarāt. Their birthplace is the chief town of the British district of Kaira, which is mentioned in inscriptions, and gave its name to a kingdom in Hiuen Thsang's time (c. 640 A.D.).

Shrīmāli is the name of a sub-caste of Brahmans and of another of Banyās in Mārwār. It is derived from the town of Shrimāl of Bhīnmāl in Mārwār, which was the capital of a kingdom in Hiuen Thsang's time and long after (*see* Bo. Gaz. I, pt. i. App. Bhīnmāl).

Lāḍ is the name of a sub-caste of Banyās in Gujarāt and parts of the Deccan. It is derived from the ancient Lāṭa (Ptolemy's *Λαρικη*), the old name of Southern Gujarāt

Soraṭhiā is the name of a sub-caste of Brahmans and another of Banyās in Káthiáwáḍ, the *Συραστρηνη* of the Greeks and the Saurāshṭra of the Guptas.

Audhiyā is the name of a sub-caste of Banyās who came from Ayodhyā the ancient capital of Rāma's kingdom of Kośala.

Māthur is the name of sub-castes of Brahmans, Kāyasths, and Banyās, who trace their origin to Mathurā, the capital of the S̈ūrasena kingdom.

Shrivāstav is the name of a sub-caste of Kāyasths who are supposed to have come from S̈rāvastī in Northern Kośala.

Saksena is the name of another Kāyasth section, who are supposed to have come from Sāṅkāśyā, the modern Sankiśa.

It will be noticed that, while some sub-castes take their names from the kingdom, others take it from that of the capital city. The latter is especially common in the case of the trading and artisan classes.

Another means of testing the correctness of the theory put forward in this paper, as to the jurisdictional factor in the history of caste, is to look for sets of sub-castes bearing the same geographical names. Each of the old tribal kingdoms would naturally have had its own section of Brahmans, traders, carpenters, etc., and we should expect to find traces of these complete sets of castes surviving at the present day. We do, in fact, find such traces, though in many cases the sub-castes are now named from cities which are known to have been founded after the arrival of the Muhammadans in India. This may be due either to the fact that the caste organisation in these cases is really of later origin, due to the imitation of the higher classes by the lower; or to the jurisdiction over caste offences having passed, on the fall of the Hindu kings, to the craft gilds, who naturally made their principal seats in the largest cities, and were quite ready to migrate from an old capital to a new one, whose name they would then adopt as their own. Thus in Gujarāt we find castes with Ahmadābādī and Sūratī sub-divisions, though these two cities did not exist before the 15th century.

The following cases of sets of sub-castes, bearing the same geographical name, are taken from Vol. IX of the Bombay Gazetteer (Gujarāt Population) :—

Ahmádábádī section among Ghanchis (oilmen) and Mochis (shoemakers).—The city of Ahmadábád was founded in 1413 A.D. on the site of Asával, which was a place of some importance as far back as Al-Berimi's time (c. 1000 A.D.).

Chāmpāneri section among Ghanchis (oilmen) and Kansárás (bellmetal casters).—Chámpáner was the seat of a Hindu rájá early in the 15th century, and became the capital of Gujarāt in 1484 A.D., but fell into decay soon afterwards, and has been uninhabited for the last 150 years.

Gujar section among Darjis (tailors), Sonis (goldsmiths), Sutárs (carpenters), Chárans (bards), Dheḍs (scavengers), and Banyās (traders).—It is not clear whether in these cases we have to do with a true sub-caste, or with a vague geographical or linguistic division. Taken strictly, the name seems to apply to the kingdom of Northern Gujarāt and Southern Mārwār, which was known to Hiuen Thsang under the name of Kin-che-lo, and the capital of which gave its name to the Shrímátī sections of Brahmans, Banyās and Sonis (goldsmiths).

Harsolā section among Brahmans and Banyās.

Jhārolā or *Jhālorā* section among Brahmans and Banyās.

Khambātī section among Luhárs (blacksmiths), and Mochis (shoemakers).—Cambay was a large port in the time of Al-Masūdī (913 A.D.) and has remained a place of importance ever since.

Khádáyatá section among Brahmans and Banyās.—The name is said to be derived from the village of Khadīt near Parāntij.

Khedával section among Brahmans and Banyās (*see* above).

Kachela, or its synonym Parajiā, is the name of a section among Luhārs, Sonis, Chārans and Brahmans. The name Kachella occurs in inscriptions as early as the 8th century for the people of Koch.

Máru, or its synonym Mārvāḍi, is the name of a section among Darjis (tailors), Kansārās (bellmetal casters), Sonis (goldsmiths), Sutárs (carpenters), Chārans (bards), and Dheḍs (scavengers).—It denotes a man from the Rajputānā desert. As in the case of Gujar, it is possible that the name sometimes does not denote a true sub-caste but is used in a vague sense.

Modh section among Brahmans, Banyās and Ghanchis (oilmen).—This case is of interest because the town of Modhera does not seem to have ever had any great historical importance, though no doubt it was the capital of a small district.

Meváḍá section among Brahmans, Banyās, Sonis (goldsmiths), and Sutárs (carpenters).—It takes its name from the kingdom of the Rāṇā of Udepur, whose history goes back to the 8th century A.D.

Nāndorā section among Brahmans and Banyās.—The name is doubtless derived from Nāndipurī, the capital of the Gurjaras of Broach (c. 580—750 A.D.).

Nāgar section among Banyās and Brahmans.—The name seems to be derived from Vaḍnagar (Bhagwanlal's Gujarāt, p. 6), the old capital of the province known as Ānartta.

Pātānī section among Ghanchis (oilmen) and Dheḍs (scavengers), as well as among Sonis (goldsmiths) as a subdivision of Parajiās.—The name is derived from Anhilvāḍ Pātan, the capital of the Solaṅki kings (961-1242 A.D.).

Rāmdeshi section among Bhāvsārs (calico-printers) and Darjis (tailors).—The name seems to belong to North-eastern Gujarāt.

Rāyakwāl section among Brahmans and Banyās, from Raika near Dhandhuka.

Sūrati section among Ghanchis (oilmen), Luhārs (blaksmiths), Mochis (shoemakers) and Dheḍs (scavengers).—Surat cannot be traced in history with certainty before 1531 A.D., when it was sacked by the Portuguese. Before that date as far back as 1000 A.D. the chief town of the Tapti Valley was Rānder, now a suburb of Surat.

Srīmāli section among Brahmans, Banyās and Sonis (*see* above).

Sorathiā section among Brahmans and Banyās (*see* above).

Vāyadā section among Brahmans and Banyās, from Vāyad near Pātan.

The above examples are taken from the castes of a single province, but the number of cases could be indefinitely increased with a little research. But, besides these cases where sets of castes bear the same local name, it will also be found that sometimes a sub-caste of Brahmans and a sub-caste of Banyās, which are locally connected, nevertheless bear different names, owing to the Brahmans having settled in a village of their own not *at* but *near* the trading centre of the kingdom. Thus we find the Kandol Brahmans and Kapol Banyās in Gujarāt; the Karāḍe Brahmans and the Pātani Banyās (of Pātan in Sātārā) in the Deccan; the Deorukhā Brahmans and the Sangameshvari Banyās in the

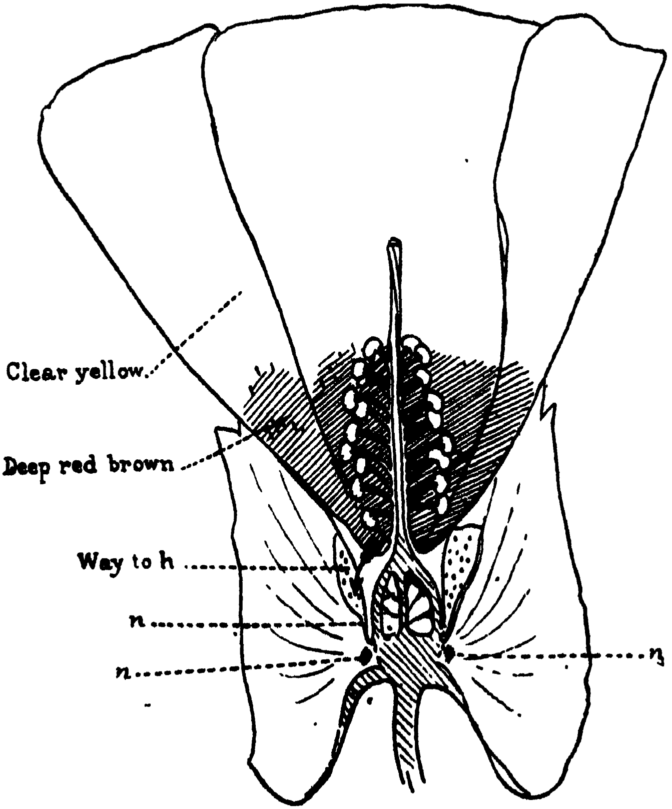
Central Konkan, and the Shenvi Brahmans and Kudâlî Banyâ in the Southern Konkan.

The above evidence will perhaps be enough to show that the jurisdiction of the Hindu kings was a very important factor in the development of the caste system, and that a certain proportion, at any rate, of the existing sub-castes, show traces of having arisen from the castes of the old Hindu kingdoms. The theory of course will not account for the origin of all the castes of the present day, nor does it throw any light upon the ultimate origin of the caste system. But it does account, in part at least, for the multiplicity of castes which takes the place at the present day of the simple social structure known to the Sanskrit law-books.

55. Notes on the Pollination of Flowers in India. Note No. 4. On Cotton in Behar.

By I. H. Burkill.

The observations here detailed were made in the current year at the following places:—Pusa and Dalsing Sarai in the district of Darbhanga; Saing, Sirseah (both north of Mozafferpur), Sarai and Kutupur (near Hajipur) in the district of Mozafferpur; Barh in the district of Patna; and Matrapur west of Arrah in the district of Shahabad. The insects were kindly named for me by Mr. H. Maxwell-Lefroy and his assistant Mr. C. R. Dutt, to whom I offer my acknowledgments.



Over the districts named spreads the peculiar custom of sowing in the rains cotton together with maize and *Cajanus indicus*

Spreng.; they grow up together, the maize fastest, the pigeon-pea after it and thereby the cotton is held back from maturing until the maize and the pigeon-pea plants have been cut from off the land: it is in May when the weather is dry and hot that the cotton harvest begins; and it is completed about the middle of June, before the rains break.

The races of the cotton that make this crop are several: in the course of my work I came across five:—

(i) Bhógila;
(ii) Bara-isár;
(iii) Jageria;
(iv) Asl Deshi or Bhúnchili or Bhúchiri or Bacharia or Chútki;
(v) Gajar-ganga.

No. iv is the most widespread: but no. i is that which gives the best outturn. Jageria and Gajar-ganga I only saw very sparingly, the one at Matrapur, and the other at Dalsing Sarai.

To enumerate here the differences between the races other than in the flower would be to digress. It will be enough to say that accepting Gammie's classification,

Bhógila }
Bara-isár } are *Gossypium neglectum*, var. *vera*,
Jageria } subvar. *bengalensis*.
Gajar-ganga ditto, subvar. *Kokatia*.
Asl deshi is *Gossypium intermedium*.

The drawing above is of a flower of Bhógila, enlarged to twice its natural size. The flower is drawn erect, but in nature its position is very variable, and perhaps the commonest condition is that the flower should face horizontally. The arrow at the base indicates one of the five narrow passages by which the honey lying between the calyx and the corolla can be drained. That honey accumulates all round inside the calyx, but chiefly below the five honey passages. The passages are guarded by short hairs, and a proboscis 5 mm. long is required for the reaching of the honey. At about 7 A.M. the bright yellow petals become unwound and the corolla expands into a funnel; the anthers at the same time dehisce, the mature stigma projecting from among them. When the flower opens, the powdery pollen begins to fall from the anthers; and it falls generally in chief part into the funnel of the corolla; but any even slight shaking of the flower—what with pollen loose in the bell and pollen ready to fall from the anthers—causes some to adhere to the stigma. It is perfectly evident that the flowers in Behar are every one of them early self-pollinated, by the action of the wind, or by the settling of insects on the flower outside or inside. A very small number of them may be cross-fertilised by insects: the rest are self-fertilised. In the late afternoon the corolla withers, having been expanded but a few hours. The capsules apparently only proves infertile when there has chanced to be a scorching dry west wind.

The stigma in these cotton flowers is typically undivided. Stigmatic hairs cover its apex and run down in three lines to the limit of, or even to 1—2 mm. within, the staminal tube. In any flower that has been open for a few hours the stigma is found well dusted with pollen at the base and sparingly about the apex.

The stigma of Asl Deshi (*Gossypium intermedium*) projects often only 1—2 mm. from the staminal tube instead of the 4 mm. that the stigmas of Bhógila and Bara-isár (*Gossypium neglectum*) project.

Outside the calyx, within the bracts and opposite to the clefts between them, are three extrafloral nectaries, which secrete honey from the time when the buds are half-grown until the bolls are ripe. These nectaries are somewhat freely resorted to by insects as my second list below shows. Any insects can get their honey.

LIST OF VISITORS WHICH WERE SEEN TO ENTER THE FLOWERS.

[*Sh.* = *sucking honey: cp.* = *collecting pollen: seeking h.* = *seeking honey in vain: the hours of observation are given as they may be useful ultimately in the study of the habits of insects; but owing to the heat of midday in May, I was only able to make few observations at it.*]

HYMENOPTERA. Apiidae. (1) *Apis indica.* Fabr., cp., Dalsing Sarai, 9.0 a.m. 29-v-07. (2) *Apis florea*, Fabr., cp., Dalsing Sarai, 9.45 a.m., 29-v-07; Sirseah, 11.0 a.m., 31-v-07. (3) *Xylocopa fenestrata.*, Fabr., sh., Pusa, 9.15 a.m., 26-v-07; Dalsing Sarai, 9.45 a.m., 29-v-07. (4) *Anthophora zonata*, Linn., sh., Barh, 8.0 a.m., 5-vi-07. (5) *Ceratina viridissima*, Dall.-Torr., seeking h., Pusa, 8.0 a.m., 27-v-07; Dalsing Sarai, 9.0 a.m., 29-v-07; Sirseah, 11.0 a.m., 31-v-07; Sarai, 9.0 a.m., 1-vi-07; Barh, 7.45—9.15 a.m., 5-vi-07. (6) *Ceratina hieroglyphica*, Smith, seeking h., Barh, 7.45 a.m., 5-vi-07. (7) *Halictus senescens*, Smith, cp. and seeking h., Pusa. 7.30—9.15 a.m., 26-v-07; 9.30 a.m., 27-v-07; Dalsing Sarai 7.45—9.30 a.m., 29-v-07; 8.30 a.m., 30-v-07; Saing, 7.30—8.30 a.m., 31-v-07; Sirseah, 11.0 a.m., 31-v-07; Sarai, 10.0—10.30 a.m., 1-vi-07; Barh, 7.45—9.15 a.m., 5-vi-07; 7.15 a.m., 6-vi-07. (8) *Halictus* sp. (white faced), cp., Saing, 8.0 a.m., 31-v-07. Eumenidae. (9) *Rhynchium metallicum*, Sauss., crawling into flowers, 2.0 p.m., 29-v-07. Sphegidae. (10) *Cerceris albopicta*, Smith, once seeking h., Barh, 8.15 a.m., 5-vi-07. Mutillidae. (13) *Mutilla analis*, Lepel., at base of flowers apparently seeking h., Barh, 8.15 a.m., 5-vi-07. Pompilidae. (11) *Salius flavus*, Fabr., inside flower, Dalsing Sarai, 9 a.m., 29-v-07. Scoliidae. (12) *Elis thoracica*, Fabr., ♂ & ♀ chiefly ♀ seeking h., strenuously, Pusa, 9.30 a.m., 26-v-07; Dalsing Sarai, 7.45 a.m., and 9.0 a.m., 29-v-07; Saing, 7.30—8.30 a.m., 31-v-07. Formicidae. (14) Camptonotus sericeus, Fabr., once. Pusa, 7.30 a.m., 26-v-07. (15) Small black ant, several times inside flower, Sarai, 10 a.m., 1-vi-07; Barh, 7.15—8.30 a.m. 5-vi-07; Matrapur, 8.0 a.m., 8-vi-07. Ichneumonidae. (16) A small species trying to find a way down passages to honey, Sarai, 9.0 a.m., 1-vi-07. LEPIDOPTERA. Rhopalocera. (17) *Papilio* sp. sh., Matrapur, 8.30 a.m., 8-vi-07. (18) *Captopsilia crocale*, Cramer, sh., Kutupur, 3 0 p.m., 1-vi-07. Heterocera. (19) *Cephonodes hylas*, Linn., sh. diligently, Kutupur, 2.45 p.m, 1-vi-07. COLEOPTERA. (20) *Mylloceru*s *maculosus*, Desb., inside flower, Pusa, 8.45. a.m. 27-v-07.

LIST OF VISITORS TO THE EXTRAFLORAL NECTARIES.

Winged Insects—

HYMENOPTERA. Apidae. (1) *Apis indica*, Fabr., Pusa, 9.15 a.m., 27-v-07; Dalsing Sarai, 6.30 a.m., 29-v-07. (2) *Apis florea*, Fabr., Pusa, 7.30—8.0 a.m., 26-v-07; 8.45—9.30 a.m., 27-v-07; Dalsing Sarai, 9.0 am. and 2 p.m., 29-v-07; Saing, 8.0 a.m, 31-v-07; Sirseah, 11 a.m., 31-v-07; Sarai, 10.30 a.m., 1-vi-07; Kutupur, 2.45—3.30 p.m., 1-vi-07. (3) *Ceratina viridissima*, Dall-Torr., Sirseah, 11.0 a.m., 31-v-07. (4) *Halictus senescens*, Smith, Pusa, 9.15 a.m., 26-v-07; Dalsing Sarai, 8.30 a.m., 30-v-07; Saing, 8.0 a.m., 31-v-07. Vespidae. (5) An orange red wasp, Sarai, 10.30 a.m, 1-vi-07. (6) A red and black wasp, Sarai, 10 30 a.m., 1-vi-07. (7) *Polistes hebraeus*, Fabr., Dalsing Sarai, 7.45—9.45 a.m., 29-v-07; Barh, 7.40—9.15 a.m., 5-v-07; Matrapur, 8.0 a.m., 8-vi-07. Eumenidae. (8)*Rhynchium metallicum*, Sauss, Dalsing Sarai, 8.30 a.m., 1-vi-07. (9) A black species, Dalsing Sarai, 9.0 a.m., 29-v-07. (10) An orange-chestnut species, Sarai, 10.30 a.m, 1-vi-07; Kutupur, 3.30 p.m., 1-vi-07. Sphegidae. (11) *Cerceris albopicta*, Smith, Barh, 5 p.m., 4-vi-07; 9.15 a.m., 5-vi-07; Matrapur, 8.0 a.m., 8-vi-07. (12) *Sphex lobatus*, Fabr., Dalsing Sarai, 2.0 p.m., 29-v-07; Kutupur, 2.45 p.m., 1-vi-07. Pompilidae. (13) *Salius flavus*, Fabr., Pusa, 7.30 a.m., 26-v-07; Kutupur, 2.45—3.0 p.m., 1-vi-07. Scoliidae. (14) *Elis thoracica*, Fabr., ♀ Pusa, 8.0 a.m., 26-v-07; 9.15 a.m., 27-v-07; Sarai, 10.30 a.m., 1-vi-07. Mutillidae. (15) *Mutilla analis*, Lepel. ♂, Barh, 5 p.m., 4-vi-07; Matrapur, 8.0 a.m., 8-vi-07. COLEOPTERA. (16) *Mylloceru*s *maculosus*, Kutupur, 2.50 p.m., 1-vi-07. (17) *Chilomenes* sp., Saing, 8.0 a.m., 31-v-07: Barh, 5 p.m., 4-vi-07.

Wingless—

HYMENOPTERA Formicidae. (18) *Myrmecocystus setipes*, Forel, Pusa, 5.15 p.m., 26-v-07; 8.15 a.m., 27-v-07; Dalsing Sarai, 9.0 a.m. and 2 p.m., 29-v-07; Sirseah, 11.0 a.m., 31-v-07; Kutupur, 3.30 p.m., 1-vi-07. (19) *Camptonotus sericeus*, Fabr., Pusa, 7.30 a.m., 26-v-07; Dalsing Sarai, 6.30 and 7.45 a.m., 29-v-07, 8.30 a.m., 30-v-07; Saing, 8.0 a.m., 31-v-07; Sarai, 9.0—10.30 a.m., 1-vi-07; Barh, 5 p.m., 4-vi-07; 8.0 and 9.0 a.m., 5-vi-07; 7.30. a.m., 6-vi-07. (20) Smaller black ant, Dalsing Sarai, 7.45—8.0 a.m., 29-v-07; Sarai 10.0 a.m., 1-vi-07; Barh, 5 p.m., 4-vi-07; 7.15—9.0, 5-vi-07; 7.0—8.0 6-vi-07; Matrapur, 7 30—9.0 a.m., 8-vi-07. (21) Tiny ant, Barh, 5.0 p.m., 4-vi-07; 7.0—8.0 a.m., 6-vi-07.

VISITOR TO THE NECTARIES WITHIN THE CALYX, BUT ENTERING THE CALYX-TUBE FROM THE OUTSIDE OF THE FLOWER.

COLEOPTERA. One Nitidulid beetle robbing honey, Kutupur, 3.30 p.m., 1-vi-07.

NUMBER OF INDIVIDUALS SEEN.

	Inside the corolla	To the nectaries of the bracts outside the corolla.
HYMENOPTERA.		
Apiidae.		
Apis indica	3	2
Apis florea	3	48
Xylocopa fenestrata	2	—
Anthophora zonata	1	—
Ceratina viridissima	21	1
Ceratina hieroglyphica	1	—
Halictus senescens	59	6
Halictus sp. (white faced)	1	—
Vespidae.		
Polistes hebraeus	—	10
Orange red wasp	—	1
Red and black wasp	—	1
Eumenidae.		
Rhynchium metallicum	1	2
Black Eumenid	—	1
Orange-chestnut Eumenid	—	2
Sphegidae.		
Cerceris albopicta	1	8
Sphex lobatus	—	4
Mutillidae.		
Mutilla analis	1	2
Pompilidae.		
Salius flavus	1	2
Scoliidae.		
Elis thoracica	6	7

	Inside the corolla.	To the nectaries of the bracts outside the corolla.
Formicidae.		
Myrmecocystus setipes	—	20
Camptonotus sericeus	1	44
Small black ant	26	257
Tiny ant	—	40
Ichneumonidae.		
One sp.	1	—
LEPIDOPTERA.		
Rhopalocera.		
Papilio sp.	1	—
Captopsilia crocale	1	—
Heterocera.		
Cephonodes hylas	1	—
COLEOPTERA.		
Myllocerus maculosus	1	1
Chilomenes sp.	—	5

It is evident that very few insects go to the flowers which have a tongue long enough to obtain the honey inside the calyx in such a way as to pollinate the stigma in doing so. *Xylocopa* and *Anthophora* are the only two among the bees. *Xylocopa fenestrata* does not show any preference for the cotton flowers; it was only seen on the flowers twice, but on one occasion was visiting very persistently: *Anthophora* shows a very distinct preference for the flowers of the lowly species of *Leucas*—*L. linifolia* and *L. aspera*—which grow as weeds among the cotton: once only—and then it was in a cotton crop where weeds were entirely absent—did I see *Anthophora zonata* visiting cotton flowers; elsewhere it was common among the cotton plants, but always busy near the ground on the two species of Leucas. *Xylocopa aestuans* was seen on the wing among the cotton plants, but instead of visiting their flowers, it was going to *Leucas linifolia* and it afterwards went to flowers of *Phaseolus calcaratus* in an adjoining crop.

Three Lepidoptera were seen on the flowers each once. They settled on the sexual organs to suck honey. The Sphingid, *Cephonodes hylas* was able to reach it in every flower visited, and was very persistently going to cotton; but the other two, to reach the honey, required that the flower should be quite wide open; for otherwise their wings prevented them from getting within the bell. The tongue of the *Captopsilia crocale* is 12 mm. long.

The following insects are certainly attracted by the honey within the flower but can not get it, *Elis thoracica*, *Ceratina* *viridissima* and *Halictus senescens*. The *Elis* crawls into the flower settling at times on the petals, at times on the sexual organs; and going straight to the bottom of the flower it strives hard to get the honey; failing, it may crawl to the extrafloral nectaries. At times it crawls inside the flower after having visited the extrafloral nectaries. One individual which I observed for some little time habitually settled as if intending to go into the flower, and then turning round went to the extrafloral nectaries and visited all three in turn. The female of *Elis thoracica* was much more abundant on the cotton flowers than the male.

Ceratina viridissima goes to the honey passages of cotton with a remarkable persistence: but its efforts are apparently unrewarded. It is easy to imprison the insect between the thumb and finger, when it is at the base of the flower; so intent is it on trying to get the honey. *Halictus senescens* behaves in a similar way, but does not so persistently seek honey.

Of pollen-collecting insects, *Halictus senescens* is important. It was found to be a common insect at every place visited, and was seen in flowers *Opuntia Dillenii* as well as in cotton flowers. On the cotton it tries often to get honey before it turns its attention to the collecting of pollen. Of whatever cross-pollination is effected, it probably does the greater part; but its methods are such as to lead to more self-pollination than cross-pollination. Once it was observed to creep to the extrafloral nectaries after it had failed to get honey within the flower. *Apis indica* and *Apis florea* at times collected pollen.

None of the other insects in the list can be of any importance to the plants as cross-pollinating agents. I have tried, very crudely I fear, to assess the importance of those that are. And I think that under the conditions seen by me it is impossible for more than 1 per cent. of the flowers to be cross-pollinated. The insect agency is therefore of small account.

Gammie (The Indian cottons, Calcutta [1906], p. 1) is inclined to think that in the west of India where the cotton crops flower towards the end of the year, cross-pollination is very rare indeed. I have had a few opportunities of observing cotton flowers there, and once only have I seen an insect to visit them; it was a Sphingid moth, and it visited flowers towards dusk at Surat (27-x-02). About Poona I have seen *Apis florea* diligently visiting the extrafloral nectaries, but never entering the flower (16-18-xii-03). It would seem that at Poona, where Gammie's observations were made, natural cross-pollination of cotton is even more rare than in Behar, and the production of natural hybrids very rare indeed. Gammie says that he could detect no natural hybrids in the thousands of plants which he grew for observation: though their parents matured together in contiguous lines upon the experimental plots, they were not produced. On the other hand Prof. T. H. Middleton (The Agricultural Ledger, no. 8 of 1895, p. 10) says that Bhógila, i.e. (*Gossypium neglectum*) seems to hybridise in nature with Deshi (*Gossypium intermedium*), for intermediates sprung up at Baroda in his experimental plot out of seed from the district of Saran.[1] I searched for such hybrids in the fields diligently when making these observations; and out of the hundred thousand individual plants which passed under my eyes I selected eight which I think are hybrids and a further nine in which a hybrid origin appears not improbable.

It seems, then, that insects such as I observed visiting the flowers in Behar, do produce an effect; but it is an extremely small one indeed—merely a hybird plant here and a hybrid plant there.

I cannot say how long Bhógila and Asl Deshi have been grown intermixed in Behar: but probably they have been cultivated in the neighbourhood of each other for a long time. Bacharia, spelled Bachree, (*i.e.* Asl Deshi) is mentioned as a cotton of Patna in 1790, along with Bhoga, Nurma, Raria and Guzza; and Bhoga, which is possibly Bhógila, is stated to be superior to Bachree as Bhógila is now to Bacharia (Reports of E. I. Company in regard to Cotton Wool, London, 1836, p. 349).

Bhógila and Bhuchiri (Asl Deshi) are mentioned together in a paper read to the Agri-Horticultural Society of India in 1830 by Babu Radhakant Deb, as sorts[2] of "banga," banga being the Behari name for the cotton plant. Bhógila is again mentioned in the Journal of the Agri-Horticultural Society, iv. (1845), p. 106, as a cotton of Gorakpur. There is no doubt as to where the home of Bhógila and Asl Deshi is. Bara-isár is the same word as in Buchanan-Hamilton's "Baresha of Shahabad" (Montgomery Martin, Eastern India, ii., 1838, p. 533). However, inasmuch as the khaki cotton called Kokati or Kukti, i.e. *G. neglectum*, var. *vera*, subvar. *Kokatia*, Gammie, was prevalent, north of the Ganges, east and west of Tirhut, when Buchanan-Hamilton wrote in 1813, and is no longer now,[3] some not inconsiderable change has taken place in the nature of the crops, which may have led only rather recently to the great intermixture of Bhógila or Bara-isár with Asl Deshi which now occurs: and this is probable because in the East India Company's report Bhoga and Bhuchiri are said to have had different uses in 1790. The intermixture is caused in a small measure by a ginning factory having started work at one central place, and in a large measure by so much of the picking being left to women, children, and ignorant hired men; for they gather the seed indiscriminately. The condition of intermixture at present is:—

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[1] Kutupur where some of my observations were made is on the border of Saran; but I made none within that district.

[2] "Banga gives three sorts, the first called Bhogella, 2nd, Bhoochurry, and the third, the Pokhy." Medlicott, in his Cotton Handbook for Bengal, Calcutta, 1862, p. 246, erroneously says that these are cottons of Malwa, having been misled by the writer's expression "Central Provinces" and the mention of the town of Bhilsa in connection with tobacco at the end of the paper. Of course the administration termed the Central Provinces did not exist in 1830.

[3] The "Gajar-ganga" seen by me at Dalsing Sarai is probably the survival of Kokatia. The name is, I believe, applied to G. arboreum also.

At Pusa, Bhógila and Asl Deshi are not to be found in pure crops; they are often mixed in proportions of about 3 : 1, Asl Deshi prevailing:

At Dalsing Sarai, a number of crops are of Bhógila grown pure; the others are intermixtures of varying proportions; further one crop contained a few plants of Gajar-ganga, and another a few of an American cotton:

At Saing and Sirseah, one small crop seen, was entirely of Asl Deshi, and another of Bhógila; the rest were mixtures of varying proportions, Asl Deshi generally predominating:

At Sarai and Kutupur, Bhógila prevails in most crops, but none are pure:

At Barh, towards the south, Asl Deshi is grown almost pure, but to the west Bara-isár, which is almost a subrace of Bhógila, makes about 50 per cent. of very mixed crops:

At Matrapur, Asl Deshi is grown, with a very slight admixture of Jageria, which like Bara-isár is almost a subrace of Bhógila.

The plants considered to be hybrids were found at Pusa, Dalsing Sarai, Saing and Barh.

As the cultivators usually clean their own seed except near the Hajipur Ginning Mill, and formerly did so near Hajipur, the degree of admixture reached indicates a cultivation of the two cottons together for some decades at the very least: and during the decades, what with the trifling selection [1] that the cultivator now and then does, and owing to the smallness of the amount of hybriding that nature does, the races have despite the intermixture maintained their purity.

A few remarks now may be made on the part that the extrafloral nectaries play in the plant's life-history.

The extrafloral nectaries play a small part in attracting insects to the flowers. It has been seen that they are resorted to by insects such as *Elis* and *Apis*, which have failed to reach the honey within the calyx. They possibly may retain insects about the plants in the early morning until the flowers open. At the rare still times when there is neither an east nor a west wind, they attract insects whose settling is enough to jerk the flower's own pollen onto the stigma.

They attract a patrol of ants, one of which—unfortunately unnamed above—is very ready to bite any intruder; and they attract wasps which we know to be at times very self-assertive like the ants; and they function from the time when the bud is half-grown until the fruit is ripe, keeping the ant patrol on the plants all the time. Probably the attracted ants and wasps protect the plants in some measure; but from what?

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[1] Greater selection is carried on, I believe, in other parts of India. *Vide* Middleton, the Agricultural Ledger, no. 8 of 1895, p 3 [103 of the volume] for the selection of "Ghogari"; my note on cotton in the Nizam's dominions in Gamie's Indian Cottons, p. 24, for the selection of "Bani"; and chiefly Gaskin in the Agricultural Journal of India, ii., 1907, p. 188, for selection of "Jari"

It seems to me that in the end of May and beginning of June, when everything is dry and the thermometer in the shade is above 100·°, insects in Behar—especially south of the river—are somewhat pressed for water or liquid food; and that consequently the little honey that the cotton offers is more largely sought than it would be perhaps at another season. Certain it is that a wet surface at this time has a great attraction. The eager seeking in the flowers for honey of *Elis*, *Salius*, *Ceratina*, *Halictus*, etc., is a sign of it: and the equally eager seeking for the glands by flying insects which do not see them, but find them in running over the foliage is another sign. Such insects are particularly *Sphex* and *Salius flavus*, and to some extent *Apis florea.*

Apis florea was observed to visit 16 extrafloral nectaries per minute.

Before closing my note reference may be made to work done on American and Egyptian cottons. It is not ample; but it indicates that in the United States and lower Egypt their flowers attract cross-pollinating insects.

The pollination of a species of cotton has been studied in the United States by Trelease (here quoted from Loew in Knuth's Handbuch d. Blütenbiologie, iii., pt. 1, 1904, p. 483). The flowers last two days, which is three or four times as many hours as last the cotton flowers of the Behar May crop. Like the Indian cottons they are self fertile. They were visited by bees, wasps, a beetle and a butterfly: many other insects go to the extrafloral nectaries.[1]

W. L. Balls (Year-book of the Khedevial Agricultural Society for 1905, Cairo, 1906, p. 205) says that natural hybridisation of cotton takes place in Egypt to some extent, but he has given no account of insect-pollination. He notices, however, some tendency to imperfect anthers in individual flowers which lays them the more open to cross-pollination.

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[1] Loew calls it *Gossypium herbaceum*, but in the use of that name he is apparently wrong.

56. Seven Stories from the *Nafḥatᵘ 'l-Yaman*; edited and translated by

LIEUT.-COLONEL D. C. PHILLOTT and MR. R. F. AZOO.

The following stories appear in the original edition of the Arabic, published by the Author in 1811, under the auspices of the College of Fort William. They have been omitted in the reprint published by the Board of Examiners and, consequently, from the two English translations of Part I of the "Breezes." They have some historical as well as anthropological interest.

STORY I.[1]

A certain man of letters has narrated: "*Khālid*,[2] the Secretary, used to love beautiful boys, and towards the close of his life his mind had become affected on this account. One day I saw him astride a cane[3] talking to a good-looking youth and saying to him:—

'Is it not time that thy heart should pity me?'

The youth said, 'No.'

Said *Khālid*, 'For how long will love for thee make sport of me?'

Said the youth, 'For ever.'

Said *Khālid*, 'How long am I to endure anguish on thy account?'

Said the youth, 'Till death.'

Said *Khālid*, 'May God never deprive my heart of love!'

Said the youth, 'Amen!'

Added *Khālid*, 'May He never inflict thy heart with it!'

The youth replied, 'God has clearly freed it.'

Then *Khālid* said, 'If my Lord has decreed that I should love———.'

Interrupted the youth, 'What is that to me?'

Continued *Khālid*, '———with intensity of passion, what crime is that in thee?'

Said the youth, 'Ask thyself.'

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[1] There seems to be no point whatever in this story except that it is a historical fact.

[2] *Abu'l-Hayṣam Khālidᵘ-'bnᵘ-Yazīd al-Kātib*, a clerk and paymaster of the army; lived at Baghdād in the beginning of the third century of the Hijrah. His life is given in Vol. xxi of the *Kitābᵘ 'l-Aghānī*.

[3] *i.e.*, riding it as a child rides a hobby-horse. This seems to be a common action amongst mad Arabs.

The narrator continues: "I then said to the boy, 'Art thou not ashamed to answer so pertly a great man like this?'

Said the boy, 'Whenever he meets any one like me, he speaks to him in the same strain.'"

STORY II.

It is said that a youth of the *Quraysh* tribe had a good-looking and well-mannered hand-maiden, whom he loved exceedingly. His circumstances became straitened, and poverty so overtook him that he had need of her price. So he carried her to *'Irāq* in the time of *Al-Ḥajjāj*[1] [the Governor] who bought her from him, and she occupied a high position in the Governor's heart. Then a youth, a relation of his, came to stay with him; so he assigned for him a lodging near himself and treated him well. One day the youth entered into *Al-Ḥajjāj* while the girl was shampooing him. Now the youth had something of good looks, so the girl began to eye him stealthily. *Al-Ḥajjāj* noticed her, and so he presented her to the youth, who thanked[2] him and went off with her. She stayed one night with him and ran away in the early dawn[3]; and in the morning the youth could not find her. News of this reached *Al-Ḥajjāj*, so he ordered this proclamation to be cried: "Any one who may have kept a girl of such and such a description, and returns her to me, will be held free of blame." Soon after this she was brought to him. Then *Al-Ḥajjāj* said to her, "Oh enemy of God! you were one of those I liked best, so I chose for you my own cousin, a handsome youth. Now I saw you casting sheep's eyes at him, so I gave you to him. But you ran away that very night!"

She said, "My master, listen to my story; then do what you like." He said, "Out with it." She said, "I belonged to the *Qurayshi* youth, but he was in need of my price and so brought me to *Kufah.* When we neared this town he approached me and embraced me, and while he was possessing me he heard the roaring of a lion. So he sprang to his feet and drew his sword, and attacked it, and slew it with one blow, and brought its head to me, and then turned to me without his passion having cooled in the least: then he did to me what he wished. Now this cousin of yours whom you chose for me, approached me when it was dark, and while I was in his embrace, a mouse fell from the roof and he forgot himself[4] through fear and fainted. Then he lay like that a long time, and I continued to sprinkle water on him without his coming round. I feared he would die and that you would accuse me of his death. So I ran away, through fear of you." *Al-Ḥajjāj* laughed uncontrollably and added, "Woe to thee! Tell no one of this" She said, "On condition that you don't send me back to him." He said, "I agree."

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[1] Governor of 'Irāq and Khurāsān under the Omayyads (44—97 A.H., 665—716 A.D.).

[2] دَعَا لَهُ, "blessed him; prayed for him."

[3] غَلَس "Beginning of the dawn; darkness of the last part of the night, when it becomes mixed with the light of the dawn.

[4] ضَرَطَ, "*Crepitum ventris emisit*"

STORY III.

Muḥammad^u 'bn^u Isḥāq has told a story that he heard from his father, who narrated as follows:—"I once went into the presence of *Ar-Rashīd*, who had before him a tray of roses He said to me, 'Compose something about these.' So I recited:—

> It is as though they are the cheeks of the beloved that the lover's lips are kissing, and so she blushes with shame.

A slave girl, who was waiting on him, said, 'You're wrong. Why didn't you say what I'm going to say, *viz.*:—

> They are like *my* cheeks when the hand of *Ar-Rashīd* draws me to an act that necessitates a bathing![1]

The narrator continues: "*Ar-Rashīd* laughed and said, 'Go out *Isḥāq*, for this pert girl has roused me." He then got up and took her by the hand and led her off."

STORY IV.

It is said, "*Abū Ja'far Muḥammad^u-'bn^u 'Alī*[2] once sent some wine as a present to the famous poet *Al-Buḥturī*[3] by the hand of a good-looking, well-made young slave-boy. When *Al-Buḥturī* saw him, he pressed him to his breast and kissed him and, writing[4] the following lines, sent him back with them:—

> "Oh *Abū Ja'far*, the kiss from thy slave was one of the most delightful of thy presents.
> Thou didst send us the sun of wine, shining in the hand of the sun of men.
> Would that the present had been the messenger and the messenger the present!"

On reading these lines *Abū Ja'far* sent him the boy as a present"

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[1] غُسْلٌ or غُسُلٌ means "a complete washing of the whole person," prescribed by religion after certain acts.

[2] Muḥammad^u 'bn^u 'Alī al-Qummī· cf. *Kitāb^u-l-Aghānī*, Vol. xviii, 171, where this anecdote is given.

[3] A famous poet. (206—284 A.H. 821—898 A D)

[4] *Lit.*, "and wrote with him these lines (وكتب معه هذه الابيات)."

STORY V.[1]

It is said that a man of the family of *Al-Muhallab*[2] bought a black slave-boy, whom he reared and adopted. Now when his arm became strong and he developed, he fell in love with his mistress and sought her favours, and she consented. One day his master entered suddenly and behold he was embracing her; so he went to him and cut off[3] his member and left him wallowing[4] in his blood. After that, pity came to him and he feared[5] his act; so he treated him until he was cured[6] and his sickness left him. Then the slave remained a long time planning against his master, in order to appease[7] his vengeful heart. Now his master had two sons, one of them an infant,[8] the other a stripling.[9] One day the father left his home on business. Then the slave took the two boys and went up with them to the summit of the roof and began to amuse[10] them, at one time with sweets, and at another with play, until his master came in. Then his master raised his eyes and beheld his two sons on a pinnacle.[11] He cried out, "Oh my boy,[12] think of all my care in bringing you up!" The slave replied, "Don't talk of that,[13] my life is nothing to me."[14] The father said, "Well, what do you want?" He said, "Dismember yourself as you have dismembered me, or else I will cast these two down, and after them I will give my life away as easily as bestowing a cup of water." The father be-sought[1] him again and again, but he would not yield. Then the father moved as though to ascend to them, when the slave lowered[2] the two over the edge preparatory to casting them down from that great height.[3] The father said, "Wait, wait till I go and bring out a knife to do what you want." So he held up the knife to show him what he was going to do, and then cut off his member and cast it away while the slave looked on. Now when the slave was certain he had done the act, he cast down the two boys saying, "Tit for tat,[4] and one over." The two children were dashed to pieces.[5] The negro was taken, and *Al-Muʻtaṣim*[6] was written to on the matter. He directed that the youth should be slain and that all blacks should be expelled from his kingdom.

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[1] This story is told to illustrate the vindictiveness and treachery of the negro character.

[2] A princely Arab family of Baṣrah, descendants of *Al-Muhallab*ᵘ *'bn*ᵘ *Abī Ṣufrah*, who died in 83 A.H. (703 A.D.)

[3] جَبَّ in its primary sense is "to cut off."

[4] تَشَحَّطَ, "To flounder, wallow (in blood)."

[5] تَخَوَّفَ (with مِنْ) = خَافَ, "was terrified at."

[6] أُبِلَّ مِنْ [7] فِيهِ شِفَاءُ قَلْبِهِ

[8] طِفْل is applied to a child until he discriminates.

[9] يَافِع "grown up; adult"

[10] عَلَّلَ "To divert, amuse, occupy with."

[11] شَاهِق "The highest point in a building."

[12] وَيْلَكَ, *lit.* "Woe to thee." [13] *Lit.*, "leave that alone."

[14] *Lit.*, "By God, it is nothing but a life, and I'll willingly cast it away."

STORY VI.[7]

It is also related that *Ar-Rashīd* was wrath with *Abū Nuʼās*,[8] so he ordered some men to defile[9] the bedding on which he slept. So these came to the house when *Abū Nuʼās* was in, and said to him, "The *Khalīfah* has ordered us to defile thy bedding." *Abū Nuʼās* said, "The order of the *Khalīfah* must be obeyed—but has he ordered you to do anything else besides * * ?" They said, "No." Then *Abū Nuʼās* took a club in both his hands, and said to them, "Begin; but if any one of you passes water, I'll smash his head with this club." As they were unable to do the one thing without the other, they went back to the *Khalīfah* and told him. He laughed and ordered a present to be givèn to *Abū Nuʼās*.

STORY VII

It is said that *Ar-Rashīd*[10] went out hunting one day and got separated from his guard and *Al-Faẓl^{u} 'bn^{u}-r-Rabīʻ*[11] was behind him. The two encountered an old man riding on a donkey. *Ar-Rashīd* looked at the old man and saw that he had watery eyes, so he winked to *Al-Faẓl* about[1] him. Then *Al-Faẓl* said, "Old man, where are you going?" He answered, "To a garden[2] of mine." *Al-Faẓl* said, "Would you like me to tell you of something with which to treat your eyes to remove their watering?" The old man said, "Ah, how much in need am I of that!" *Al-Faẓl* said, "Take root of air, and powder of water, and leaves of truffles; put the whole in the shell of a walnut and then apply[3]; and *that* will cure the watering." Then that old man lent forward over the pommel of his saddle and—*ẓaraṭa ẓarṭat*^{an} *ṭawīlat*^{an}, saying, "Here! this is thy fee for thy prescription, and should thy collyrium cure us, we will give thee more,—thou son of a bawd." *Ar-Rashīd* laughed till he nearly rolled off the back of his beast.

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[1] يكرّر عليه, *lit.*, "repeat (his prayer) time after time."

[2] أَهْوَى بِهِمَا

[3] ذُرْوَةٌ, "The top, highest point."

[4] ذَاكَ بِذَاكَ, *lit.*, "that for that."

[5] تَقَطَّعَ الصِّبْيَانِ.

[6] The eighth *Khalīfah* of the house of *ʻAbbās*.

[7] This story is an oriental version of the pound of flesh.

[8] ابو نُؤَاس, Poet of the Court of *Hārūn^{u} 'r-Rashīd.*

[9] خَرِئَ , يَخْرَؤُا , "*Deposuit alvum.*"

[10] According to another version *Hārūn^{u}-'r-Rashīd* was disguised according to his habit and accompanied by the famous *Jaʻfar Ar-Barmakī*.

[11] Chamberlain to four khalīfahs, and minister to *Hārūn^{u}-'r-Rashīd*.

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[1] غَمَزَهُ عَلَيْهِ, *i e*, to make sport of him.

[2] حَائِطٍ.

[3] اِكْتَحِلْ بِهِ, "apply it as collyrium"

Story I.

حكاية — عن بعض الأُدباء انه قال كان خالد الكاتب مغرمًا بالمِلاح ۔ وكان قد توسوس في آخر عمره فرأيته يخاطب غلامًا مليحًا ويقول له وهو راكبٌ على قصبةٍ ما آن ان يرحمني قلبك فقال له الغلام لا فقال خالد حتّى متى يلعب بي حبُّك فقال الغلام ابدا فقال خالد وكم اقاسي فيك جهد البلاَ فقال الغلام حتّى الموت فقال خالد لا اعدم اللّٰه فؤادي الهوى فقال الغلام آمين فقال خالد ولا ابلى به قلبك فقال الغلام فعَلَ اللّٰه ذلك فقال خالد ان كان ربّي قد قضى بالهوى فقال الغلام ما عليَّ انا فقال خالد وشِدّةِ الحبِّ فما ذنبك فقال الغلام سل نفسك ۔ قال فقلت للغلام اما تستحي من هذا الرجل مع جلالة قدره فقال الغلام كل من يلقاه مثلي يقول له هكذا *

Story II.

حكاية — قيل ان جارية مليحة الوَجْه حَسَنة الادب كانت لفتًى من قريش وكان يحبُّها حبًّا شديدًا فاصابته ضيقة وفاقة فاحتاج الى ثمنها فحملها الى العراق وكان ذلك في زمن الحجّاج فابتاعها منه فوقعت عنده بمنزلة فقدم عليه فتى من اقاربه فانزله قريبًا منه واحسن اليه فدخل على الحجاج يومًا والجارية تكبّسه وكان للفتى جمال فجعلت الجارية تسارقه النظر ففطن الحجّاج بها فوهبها له فدعا له وانصرف بها فباتت معه ليلتها وهربت بغلس فاصبح لا يدري اين هي وبلغ الحجاج ذلك فأمر مناديًا ينادي برأت ذمّة

من رأى وصيفة من صفتها كذا وكذا فلم يلبث ان اتي له بها فقال لها الحجاج يا عدوّة الله كنت عندي من احبّ الناس اليّ فاخترتُ لك ابن عمي و هو شابّ ن الوجه و رأيتك تسارقينه النظر فعلمت انك شغفتِ به و بحبّه فوهبتك له فهربتِ في ليلتك فقالت يا سيدي اسمع قصتي ثم اصنع ما احببتَ قال هاتي قالت كنتُ للفتى القرشيّ فاحتاج الى ثمني فحملني الى الكوفة فلما دنونا منها دنا مني فوقع علي فسمع زئير الاسد فوثب و اخترط سيفه و حمل عليه و ضربه فقتله و اتى برأسه ثم اقبل علي و ما برد ما عنـــده ثم قضى حاجته و ان ابن عمك هذا الدي اخترته لي لما اظلـــم الليل قام اليّ و انه لعلى بطني اذ وقع فأرة من السّقف فضرط ثم غشي عليه فمكث زمانًا طويلاً و انا ارش عليه الماء و هو لا يفيـــق فخفت ان يموت فتتهمني فيه فهربت فزعًا منك فما ملك الحجاج نفسه من شدة الضحك و قال ويحكِ لا تعلمي بهذا احدًا قالت بشرط ان لا تردّني اليه قال لكِ ذلك *

STORY III.

حكاية ـــ حدّث محمد بن اسحق عن ابيه قل دخلت على الرشيد و بين يديه طبقٌ فيه وردٌ فقال قل في هذا شيئا فقلت * * شعر *

كأنه خد محبـــوبٍ يقبّلـــهُ   فم المحـــبّ و قد اضحى به خَجِلا

فقالت له جارية كانت على راسه اخطـــأت الا قلـــت كمـــا اقول

كأنه لون خدي حين تدفعني   يدُ الرشيـــد لامرٍ يوجب الغُسُـــلا

قال فضحك الرشيد و قال اخرج يا اسحق فقد حرّكتني هذه الماجنة . ثم قام و اخذ بيدها و خلا بها *

STORY IV.

حكاية — قيل اهدى ابو جعفر محمد بن علي الى البحتريّ الشاعر المعروف نبيذًا مع غلام حسن الوجه بديع الوصف فلما رآه البحتري ضمّه اليه و قبّله و كتب معه هذه الابيات * * ابيات *

ابا جعفرٍ كان تقبيلنا غلامك احدى الهنات الهنيّةْ
بعثت الينا بشمس المدا مِ تشرق في كفّ شمس البريّةْ
فليت الهدية كان الرسول و ليت رسولك كان الهديّةْ

فلما قرأ الابيات ارسل اليه الغلام *

STORY V.

حكاية — قيل ان رجلًا من آل المهلَّب اشترى غلامًا اسود فربّاه و تبنّاه فلما اشتدّ ساعده و ترعرع هوي سيدته فراودها عن نفسها فاجابته الى ذلك فدخل مولاه يومًا على غفلة فاذا هو على صدر سيدته فعمد اليه و جبّ ذكره و تركه يتشحّط في دمه ثم انه ادركته عليه رقة و تخوف من فعله فعالجه حتى اقيل من علته و خرج من مرضه فاقام بعد هذا مدة يدبر على مولاه امرًا يكون فيه شفاء قلبه و كان لمولاه ابنان احدهما طفل و الآخر يافع فغاب الرجل عن منزله لبعض اموره فأخذ العبد الصبيين وصعد بهما الى ذروة سطح عالٍ وجعل يعلّلهما بالطعام مرة و باللعب اخرى الى ان دخل مولاه فرفع راسه فاذا هو بابنيه في شاهق فقال ويلك أَللّٰه اللّٰه في تربيتي لك قال دع عنك هذا فواللّه ما هي الا نفس لارمينَّ بها قال ويلك و ما تريد قال جبَّ نفسك كما جَبّبتني او لارمينّ

بهما و اني لاسمع بعدهما بنفسي مثل شربة ماء قال فجعل يكرر عليه و هو يأبى و ذهب ليروم الصعود اليهم فاهوى بهما ليرميهما من ذروة ذلك الشاهق فقال ادوهما ويلك فاصبـــر حتى اخرج المدية و افعل ما اردت فاخذ المدية ليريه ما يصنع بنفسه فرمى بذكره و هو يراه فلما علم انه قد فعل رمى بالصبيّين و قال ذلك بذاك و هذي زيادة فتقطع الصبيّان و اخذ ذلك الاسود و كتب بخبره الى المعتصم بالله فامر بقتلـــه و ان يخرج من مملكته كل عبد اسود *

STORY VI.

حكي ان الرشيد غضب على ابي نواس يومًا فامر جماعةً ان يخرؤُا على فراشه الذي يرقد عليه فأتوه و هو ببيته فقالوا له امرنا الخليفة بان نخرأ على فراشك فقال امرُ الخليفة مطاع فهل امركم بشيءٍ غير الخراء قالوا لا فاخذ خشبـــة بيـــديه و قال لهم اخرؤا ولكن ان بال احدٌ منكم ضربت راسه بهذه الخشبة فما امكنهـــم ذلك بغير ان يبولوا فرجعوا الى الخليفة و اعلموه بذلك فضحك و امر له بصلةٍ .

STORY VII.

حكاية — قيل ان الرشيد خرج يومًا الى الصيد فانفرد من عسكره والفضل ابن الربيع خلفه فاذا هو بشيخٍ على حمار فنظر اليه الرشيد فاذا هو رطب العينين فغمز الفضل عليه فقال له الفضل اين تريد يا شيخ قال حائطًا لي قال هل لك ان ادلّك على شيء تداوي به عينيك فتذهب هذه الرطوبة قال ما احوجني الى ذلك فقـــال خذ عيدان الهوى و غبار الماء و ورق الكمأة و صيره في قشر

جوزة و اكتحل به فانه يذهب رطوبة عينيك فاتكا الشيخ على قربوس فرسه و ضرط
ضرطة طويلة و قال خذ هذه اجرتك لوصفك و ان نفعنا الكحل زدناك يا ابن
الفاعلة فضحك الرشيد حتى كاد ان يسقط من ظهر دابته •

57. Note on the Bidri ware of Purneah.

By R. J. Hirst.

The manufacture of this ware is described in detail in Sir W. W. Hunter's "Statistical Account of Purneah," and briefly noticed in Dr. Birdwood's "Indian Arts." The following note will be found to contain some supplementary information.

In Purneah the word "Bider" is applied to the amalgum of zinc (*dasta*) and copper (*tamba*), which is employed in the manufacture of this ware. Tin, which, according to Dr. Birdwood, forms one of the ingredients, is no longer used. The metals are melted, mixed, cast into the required shape, and finally turned on a very primitive lathe, by men of the Kanseri caste. There are only three Kanseris in the whole district now employed in this work, two of whom live at Belauri, a village about two miles south of Purneah Railway Station, and the other at Katihar. The cast most commonly takes the form of a hookah-stand, but Serahis, Serposhes, etc., are made to order.

The manufactured Bider is sold to the damascene workers of Purneah Town and Kasba at the rate of Re. 1-4 per seer. The metal is then slightly darkened with sulphate of copper (*tutia*), and the design traced with an instrument resembling a sharpened nail. Rough compasses are also used. Mistakes in the design can be readily effaced with water, and a second application of the sulphate of copper; but such mistakes are rare, and Mohan Sonar, who is the principal designer, works very quickly and unerringly. There are two other designers, but they confine themselves to certain unvarying patterns.

The edges of the leaves, petals, etc., which form the design, are then sharply defined with a small chisel. Silver leaf is cut up into small pieces, which are roughly shaped to fit the details of the design, and then fixed in position, the instruments employed being a hammer and a blunted nail which is used as a punch. The silver leaf breaks off when it comes in contact with the edges left by the chisel, and leaves the details of the pattern well defined. Very little subsequent trimming is necessary. The leaf is now firmly embedded in, and appears to form part of, the Bider. No adhesive of any kind is employed.

This appears to be a comparatively simple operation, the skilled touch manifesting itself in the engraving with the chisel rather than in the actual inlaying.

The number of artizans employed in the engraving and inlaying processes, including the three designers mentioned above, who also perform the operations subsequent to designing, is seven.

The article is next smoothed and polished on a wheel (*charak*). The ground-work is then darkened with a paste formed of saltpetre, nitre, borax, and salammoniac, which produces a rich and permanent black. When the blackening process is finished, the whole is cleaned and given a final polish with mustard or rape-seed oil.

The price of the finished article varies with the thickness of the silver leaf employed. In the cheapest kind of work, the roughness of the Bider can be seen through the inlaid leaf, and the definition is not so sharp as in the higher grades, in which the silver presents a very smooth, highly-polished surface. Many of the patterns must, of course, have been handed down from bygone generations, but I am inclined to attribute the majority of those I have seen to the fertile invention of Mohan Sonar, who appears to vary the design with every article produced.

A common pattern is formed of flowers with eight petals, interspersed with lines, and festoons and spirals of small leaves; but the more expensive articles exhibit great diversity of design.

Mohan and his brother, Makund Lal Sonar, also practise the art of inlaying gold on silver, gold on Bider, and silver on copper. The last method is usually employed in the manufacture of Serposhes.

Bidri work, as far as Purneah is concerned, is a dying craft. None of the artizans who gain their living by the various processes are willing to instruct their children in the art. There is a plentiful market for the ware, but the margin of profit is small, and out of all proportion to the tedium of the work. The engravers and inlayers are dependent for their material on three middle aged Kanseris, who are resolved to let the art of preparing the Bider die with them. The inlayers are quite ignorant of the method of preparation of the amalgum, so much so that several of them told me that lead formed the chief ingredient.

Unless, therefore, steps are taken to ensure a succession of skilled craftsmen, the industry cannot last another twenty years.

A list of the artizans of Purneah District employed in the manufacture of Bidri ware.

Melting, casting and turning.	Satua Kanseri, of Belauri.
	Manju " "
	Udhu Sau Kanseri, of Katihar.
Designing, engraving, and inlaying.	Mohan Sonar, of Purneah.
	Bulaki Kurmi "
	Kantar Kurmi, of Kasba.
Engraving and inlaying.	Chedi Kurmi, of Purneah.
	Guhi " "
	Nawal Kishore Kurmi, of Kaliganj.
	Makund Lal Sonar, of Purneah.

I could find no trace of the Dhanuks, Sunris, and Mahommedans, mentioned by Sir W. W. Hunter as engaged in this manufacture.

58. Indian Logic as preserved in Tibet, No. 3.

By Mahāmahopādhyāya Satis Chandra Vidyabhusana, M.A., M.R.A.S.

The Tibetan manuscripts and block-prints, from which the materials of the present paper were derived, are in the monastery of Labrang, 13 miles north of Gangtok. Labrang, which literally signifies "a residence of Lamas." It is a very solitary place almost abandoned by men. The only attractive feature of the place is the monastery, which belongs to the Nyingma-pa sect, and under the roof of which there reside half a dozen Lamas whose monotonous days are only enlivened by the incessant blowing of conches, ringing of bells and the repetition of "Oṁ-maṇi-padme-huṁ" and other incantations. The monastery, which at present exists, was built by Rajkumar Rig-zing-cham-po of Sikkim about 66 years ago. It lies within half a mile of Pho-dang which was once the capital of Sikkim. At Pho-dang also there is a monastery established on the site once occupied by the *jong* (fort) of the Bhutanese invaders. The Bhutanese, during their first invasion, built a *jong* there. Subsequently when the Sikkimites re-occupied it, they turned the *jong* into a monastery of the Karma-pa sect. There has been a long succession of Head Lamas presiding over the monastery, the present Head Lama being Sidkyong-tul-ku, the Maharaj-kumar of Sikkim.

Most of the Head Lamas of the monastery of Pho-dang were disturbed by evil spirits. Dum-chot, who was a very devout and learned Lama, after three years' stay at Pho-dang, was visited one night by the evil spirit who had killed the former, Lamas. The evil spirit showed the bones of the previous Lamas to Dum-chot and threatened him with the same fate, *viz.*, that he would be devoured. But the Lama silenced him by his will-power and the evil spirit vanished away. One year afterwards the evil spirit renewed his attack in the shape of a big scorpion, which dropped down in a thunder-storm, but was killed by the Lama. Five years afterwards a pair of rock-snakes coiled themselves on the pillar of the temple hall; one of then was killed with the aid of some people, the other escaped. Then he invited all the monks and laymen and told them how the evil spirit had been overcome. He was so far successful that he lived nearly seven years after this event.

In this very monastery of Pho-dang, I, with servants, resided for a week (3rd June—9th June 1907), with a view to examine the Tibetan books existing there as well as in the neighbouring monastery of Labrang. The present paper is a part of the result of my inquiries into the records of the monastery at Labrang, where the following works, besides others, exist in faithful Tibetan translations.

1. Pramāṇa-vārtika-pañjikā[1] (*Tib. Tshad-ma-rnam-ḥgrel-gyi-dkaḥ-ḥgrel)*—" *Explanation of difficulties in the* Pramāṇa-vārtika " by teacher Devendrabodhi[2] (Tib. Lha-dwaṅ-ḅlo).

The work extends over folios 1—380 of the Tangyur, constituting volume *Che* (ཆེ) of section Ṃdo, and contains two frontispieces, *viz.* of Dharmakīrti and Devendrabodhi. It was translated into Tibetan by the great Indian sage Subhūti-śrī and the Tibetan interpreter-monk Ḍge-waḥi-ḅlo-groṣ. The Tibetan version ends thus :—

" The Pramāṇa-vārtika-pañjikā compiled by the very eloquent teacher Devendrabodhi is finished. For the sake of benefit to the world by elucidating the doctrine and perpetuating it long, the Nyāyaśāstra has been translated; by the pure merit which has been produced thereby, may we cross the cycle of existence and find the three persons of Buddha."[3]

2. Pramāṇa-vārtika-[pañjikā]-[4]ṭikā (Tib. Tshad-ma-rnam-ḥgrel-gyi-ḥgrel-ḅśad)—Annotation (part I) on the Pramāṇa-vārtika-pañjikā (of Devendrabodhi) by teacher Śākya-bodhi (Tib. Śā-kya-ḅlo).

The work extends over folios 1—385 of the Tangyur, constituting volume *Je* (ཇེ) of Section Ṃdo. It was composed by teacher S'ākya-bodhi (Tib. S'ā-kya-ḇlo) and opens with a salutation to Mañju-ghoṣa (H̱ jam-ḏwyaṅṣ) thus:—

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[1] This Sanskrit title is restored from the Tibetan version.

[2] The name Devendrabodhi is restored from Tibetan: Lha-dwaṅ-ḅlo which may also be rendered by Surendra-bodhi.

[3] སྨྲ་བ་ཆེན་པོ་སློབ་དཔོན་ལྷ་དབང་བློས་མཛད་པ།། ཚད་མ་རྣམ་འགྲེལ་གྱི་དཀའ་འགྲེལ་རྫོགས་སོ།། བསྟན་པ་གསལ་དང་ཡུན་རིང་གནས་དོན་དང་།། འགྲོ་ལ་ཕན་ཕྱིར་རིགས་པའི་བསྟན་བཅོས་དག། བསྒྱུར་བས་བསོད་ནམས་རྣམ་དག་གང་སྐྱེས་པས།། འཁོར་བ་ལས་བརྒལ་སྐུ་གསུམ་ཐོབ་པར་ཤོག།

(Tangyur, Ṃdo, Che, folio 380).

[4] The original reads: Pramāṇa-vārtika-ṭikā., But on the title page it is stated that the ṭikā is on Devendrabodhi's work. So I have given the full name: Pramāṇa-vārtika-pañjikā-ṭikā. A similar remark is applicable to No. 3.

"Who by the sharp weapon of his wisdom cutting off all nets of miseries has become mercy itself, whose very pure intellect comprehends unimpeded all knowable objects, who for numerous ages past has never been weary in doing good to others—to that Mañju-ghoṣa bowing down I shall analyse the hundred divisions of the original commentary-text."[1]

This volume consists of 1—31 sections (Bam-po), and the Tibetan version begins with a salutation to the Omniscient One (Buddha).

[From No. 3 it appears that No. 2 was also translated into Tibetan by Ḏge-waḫi-ḇlo-groṣ.]

3. Pramāṇa-vārtika-(pañjikā]-ṭīkā (Tib. Tshaḏ-ma-ṟnam-ḫgrel-gyi-ḫgrel-ḇśaḏ)—Annotation (part II) on the Pramāṇa-vārtika-pañjikā (of Devendrabodhi) by teacher S'ākya-bodhi.

This work, which extends over folios 1—346 of the Tangyur, constituting volume *Ñe* (ཉེ) of section M̱do, was composed by teacher S'ākya-bodhi (Tib. S'ā-kya-ḇlo) and is a continuation of volume Je. It begins with the 32nd section (Bam-po) and ends thus:—

"The Pramāṇa-vārtika-[pañjikā]-ṭīkā, composed by teacher S'ākya-bodhi meditating on the feet of Bhagavān Mañju-ghoṣa, is finished."[2] The work was translated into Tibetan by the interpreter Ḏge-waḫi-blo-groṣ.

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[1] གང་ཞིག་ཤེས་རབ་མཚོན་རྣོན་ཉོན་མོངས་དྲ་བ་མཐའ་དག་རབ་བྲལ་བརྩེ་བའི་བདག་ཉིད་ཅན།། ཤིན་ཏུ་དྲི་མེད་བློ་གྲོས་གང་གི་ཐུགས་ནི་ཤེས་བྱ་ཀུན་ལ་ཐོགས་པ་མི་མངའ་ཞིང་།། གང་ཞིག་བསྐལ་པ་གྲངས་ལས་འདས་པར་གཞན་ལ་ཕན་པ་མཛད་ལ་སྐྱོ་བར་མ་གྱུར་པ།། འཇམ་དབྱངས་དེ་ལ་ཕྱག་འཚལ་ནས་ནི་གཞུང་འགྲེལ་ལུགས་བརྒྱ་ལྡན་པ་རྣམ་པར་དབྱེ་བར་བྱ། (Tangyur, M̱do, Je, folio 1)

[2] བཅོམ་ལྡན་འདས་འཇམ་པའི་དབྱངས་ཀྱི་ཞབས་སྒོམ་པ། སློབ་དཔོན་ཤཱཀྱའི་བློས་སྦྱར་བ་ཚད་མ་རྣམ་འགྲེལ་གྱི་འགྲེལ་བཤད་རྫོགས་སོ།། (Tangyur, M̱do, Ñe, folio 346).

4. **Pramāṇa-vārtikālaṅkāra** (Tib. Tshaḍ-ma-ṟnam-ẖgrel-gyi-ṟgyan)—"The ornament of Pramāṇa-vārtika (part I)" by teacher Prajñā-kara-Gupta (Tib. S'eṣ-rab-ẖbyuṅ-g̱naṣ-s̱baṣ-pa).

This work, which extends over folios 1—352 of the Tangyur, constituting volume *Te* (ཏེ) of section M̱do, begins thus:—

"Wishing good to the world realised by Pramāṇa and bowing down to teacher Sugata, the Protector, I shall, out of kindness towards those going astray to the whirlpool of bad arguments, regularly explain the perfect Pramāṇa."[1]

The Tibetan version begins with a salutation to the Omniscient One.

5. **Pramāṇa-vārtikālaṅkāra** (Tib. Tshaḍ-ma-ṟnam-ẖgrel-gyi-ṟgyan)—The ornament of the Pramāṇa-vārtika (part II or chapter III, IV) by teacher Prajñā-kara-Gupta (S'eṣ-rab-ẖbyun-g̱naṣ-s̱baṣ-pa).

This work extends over folios 1—328 of the Tangyur, constituting volume *The* (ཐེ) of section M̱do. It was translated several times at intervals. The last translation was made by the great Kāśmīrian Pandit Bhāgya-rāja[2] (Tib. Ṣkal-ḻdan-ṟgyal-po) and the Tibetan interpreter Ḇlo-ḻdan-śeṣ-rab). Subsequently it was looked through by Sumati and the interpreter Ḇlo-ḻdan-śeṣ-rab. The translation had the advantage of having been assisted by the numerous sages of the great monastery of Vikramaśīla in Middle India under the supervision of the great wise Pandit S'rī Sunayaśrī-mitra and also of the wise Pandit Kumāraśrī of the model city of Kāśmīra.

6. **Pramāṇa-vārtikālaṅkāra-ṭikā** (Tib. Tshaḍ-ma-ṟnam-ẖgrel-gyi-ṟgyan-gyi-ẖgrel-ḇśaḍ)—"Annotation on the Pramāṇa-vārtikālaṅkāra (part I)" by teacher Jina (Tib. Ṟgyal-wa-can).

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[1] ཚད་མ་ཡང་དག་འགྲོ་ལ་ཕན་བཞེད་པ ||
སྟོན་པ་བདེ་གཤེགས་སྐྱོབ་ལ་ཕྱག་འཚལ་ཏེ ||
རྟོག་གེ་ངན་འཁྲུལ་འགྲོ་བ་ལ་བརྩེ་བས ||
ཚད་མ་གྲུབ་པ་ཚུལ་བཞིན་བཤད་པར་བྱ ||
(Tangyur, M̱do, Te, folio 1).

[2] This Sanskrit name is restored from the Tibetan: Ṣkal-ldan-ṟgyal-po.

This work extends over folios 1—415 of the Tangyur, constituting volume *De* of section M̱do. The Tibetan version begins with a salutation to Ārya Mañjuśrī-kumāra-bhūta (Tib. H̱jam-ḏpal-gshon-nur-gyur-pa) and ends with the formula :—

Ye dharmā hetu-prabhavā hetunteṣāntathāgato hyavadat,
Teṣāñca yo nirodha evaṁvādī mahāśramaṇaḥ.

"Whatever things proceed from cause, their cause the Tathāgata has declared; and what is the check to these is thus set forth by the great ascetic."

7. Pramāṇa-vārtikālaṅkāra-ṭīkā (Tib. Tshaḏ-ma-ṟnam-ẖgrel-gyi-ṟgyan-gyi-ẖgrel-ḇśaḏ)—"Annotation on the Pramāṇa-vārtikālaṅkāra (part II)" by teacher Jina (Ṟgyal-wa-can).

The work extends over folios 1—368 of the Tangyur, constituting volume *Ne* (ནེ) of section M̱do. It was translated into Tibetan in the model monastery of the blessed province of Tholiṅ by the Indian Pandit Śrī-Dīpaṅkara-rakṣita of Vikramaśila and the Tibetan interpreter Byaṅ-chub-śeṣ-rab of Shaṅ-shuṅ.

8. Pramāṇa-vārtika-ṭīkā (Tib. Tshaḏ-ma-ṟnam-ẖgrel-gyi-ẖgrel-ḇśaḏ)—"Annotation on the Pramāṇa-vārtika (part I)" by Brahman Śaṅkarānanda (Tib. Bram-ze-ḇde-byeḏ-ḏgaẖ-wa).

The work extends over folios 1—384 of the Tangyur, constituting volume *Pe* (པེ) of section M̱do. The Tibetan version begins with a salutation to the Omniscient One (Buddha).

9. Pramāṇa-vārtika-ṭīkā (Tib. Tshaḏ-ma-ṟnam-ẖgrel-gyi-ẖgrel [-ḇśaḏ])—Annotation on the Pramāṇa-vārtika (part II) [by Śaṅkarānanda].

The work extends over folios 1—342 of the Tangyur, constituting volume *Phe* (ཕེ) of section M̱do.

10. [Pramāṇa-vārtikālaṅkāra-ṭīkā] (Tib. Tshaḏ-ma-ṟnam-ẖgrel-ṟgyan-gyi-ẖgrel-ḇśaḏ)—Annotation on the Pramāṇa-vārtikālaṅkāra (part I) by Jamāri.

The work extends over folios 1—303 of the Tangyur, constituting volume *Be* (བེ) of section M̱do, and ends thus :—

"By the immeasurable merit heaped up by composing this regular annotation, may I, subduing the adversary—

death—in this world, obtain the indestructible and perfect Nirvāṇa."[1]

11. [Pramāṇa-vārtikālaṇkāra-ṭīkā] (Tib. Tshad-ma-rnam-hgrel-rgyan-gyi-ṭīkā)—Annotation on the Pramāṇa-vārtikālaṅkāra (part II) [by Jamāri ?].

The work extends over folios 1—400 of the Tangyur, constituting volume *Me* (མེ) of section Mdo.

12. [Pramāṇa-vārtikālankāra-ṭikā] Tib. Tshad-ma-rnam-hgrel-gyi-rgyan-gyi-ṭikā)—Annotation on the Pramāṇa-vārtikālaṅkāra (last part) by the sage S'rī Jamāri.

The work extends over folios 1—311 of the Tangyur, constituting volume *Tse* (ཙེ) of section Mdo. It was translated into Tibetan by Paṇdit Sumati and the interpreter Blo-ldan-ses-rab in the monastery of Ṣñe-than near Lhasa.

13. Pramāṇa-viniścaya-ṭikā (Tib. Tshad-ma-rnam-ńes-kyi-ṭikā)—Annotation on the Pramāṇa-viniścaya by teacher Dharmottara (Tib. Chos-mchog).

The work extends over folios 1—188 of the Tangyur, Mdo, *We* (ཝེ). It was translated into Tibetan by the Kāśmirian Pandit Parahita Bhadra (Tib. Gshan-la-phan-pa-bzan-po) and others, and the Tibetan interpreter Blo-ldan-śes-rab in the model city (of Kāśmīra ?).

Dharmottara, who composed the work, is described as the excellent subduer of bad disputants.[2] The translator concludes the Tibetan version thus :—

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[1] ཚུལ་བཞིན་ཊཱིཀཱ་འདི་ནི་བྱས་པ་ལས།།
བསོད་ནམས་ཚད་མེད་བསགས་པ་གང་ཡིན་པ།།
དེས་ནི་འཇིག་རྟེན་གཞན་རྗེའི་དགྲ་འཇོམས་ནི།།
མི་ཟད་རབ་བསྒྲུབ་གཉིས་མེད་ཐོབ་པར་ཤོག།

(Tangyur, Mdo, Be, folio 303).

[2] སློབ་དཔོན་ཆོས་མཆོག་རྟོག་གེ་ངན་འཇོམས་མཆོག།

(Tangyur, Mdo, We, folio 188)

"By the merit arising from this Pramāṇaśāstra, in which the meanings are so clear, being well translated, may people turning away from perverse views enter the path of perfect logic (righteousness)."[1]

14. Pramāṇa-viniścaya-ṭikā (Tib. Tshad-ma-rnam-par-ṅes-pahi-hgrel-bśad)—Annotation on the Pramāṇa-viniścaya by the Kāśmirian sage Jñāna-śrī.

The work extends over folios 188—322 of the Tangyur, Mdo, *We* (བེ). It was composed by teacher Jñāna-śrī-bhadra (Tib. Ye-śes-dpal-bzaṅ-po) and translated into Tibetan by the author and the interpreter-monk Chos-kyi-brtson-hgrus. The Tibetan version begins with a salutation to the Omniscient One (Buddha).

15. Yukti-ṣaṣṭhikā-kārikā (Tib. Rigs-pa-drug-cu-pahi-tshig-lehur-byas-pa)—"Sixty memorial verses on argumentation" by Nāgārjuna (Tib. Klu-grub).

The work extends over folios 20—22 of the Tangyur, Mdo, *Tsa* (ཙ), and begins thus :—

"Who is freed from the courses of birth and destruction and who preached the doctrine of dependent origination (*Pratītya-samut-pāda*), to that lord of sages I bow down."[2]

It was translated into Tibetan by the Indian sage Mutita-śri

ཡང་དག་དོན་གསལ་ཚད་མའི་བསྟན་བཅོས་འདི།།
ལེགས་པར་བསྒྱུར་ལས་བྱུང་བའི་བསོད་ནམས་གང་།།
དེས་ནི་ལོག་ལྟའི་རྒྱུན་ཕྱོགས་སྐྱེ་བོ་རྣམས།།
ཡང་དག་རིགས་པའི་ལམ་དུ་འཇུག་པར་ཤོག།

(Tangyur, Mdo, We, folio 188).

གང་གིས་སྐྱེ་དང་འཇིག་པ་དག།
ཚུལ་འདི་ཡིས་ནི་སྤངས་གྱུར་པ།།
རྟེན་ཅིང་འབྱུང་བ་གསུང་པ་ཡི།།
ཐུབ་དབང་དེ་ལ་ཕྱག་འཚལ་ལོ།།

(Tangyur, Mdo, Tsa, folio 2).

and the Tibetan interpreter Tshab-ñi-ma-grags. The Tibetan version begins with a salutation to Mañju-śrī-kumāra-bhūta.

[It is not properly a work on logic, but a treatise on the Mādhyamika philosophy, replete with logical arguments.]

16. Vigraha-vyavartanī kārikā (Tib. R̲tsod̲-pa- b̲zlog-pah̲i-tshig-leh̲ur-byas-pa)—"Memorial verses on subduing disputes" by teacher Nāgārjuna.

The work extends over folios 26—29 of the Tangyur, M̲do, *Tsa* (ཙ). It was translated into Tibetan by the Indian sage Jñāna-garbha and the Tibetan interpreter Ka-wa-d̲pal-b̲rtsegs. Subsequently it was recast by the Kāśmīrian Pandit Jayānanta and the interpreter Khu-m̲do-s̲de-d̲pal.

17. Vigraha-vyavartanī Vṛtti (Tib. R̲tsod̲-pa-b̲zlog-pah̲i-h̲grel-pa)—"Commentary on the Vigraha-vyavartanī" by teacher Nāgārjuna.

The work extends over folios 128—146 of the Tangyur, M̲do, *Tsa* (ཙ). It was translated into Tibetan by the Indian sage Jñāna-garbha and the Tibetan interpreter Vande-vana-rakṣita. The Tibetan version begins with a salutation to Mañju-śrī-kumāra-bhūta.

18. Bhrama[1]-pramathana-yukti-hetu-siddhi (Tib. H̲khrul-pa-b̲zlog-pah̲i-rigs-pa-gtan-tshigs-grub-pa) — "Establishment of arguments and reasons for quelling mistakes" by teacher Ārya Deva (Tib. H̲phags-pa-lha).

The work, which extends over folios 18—21 of the Tangyur, M̲do, *Tsha* (ཚ), begins with a salutation to Buddha thus :—

"Bowing down to the teacher—the lamp of the world, the remover of inner miseries, the preacher of the nectar-like doctrine and the instructor of men—with three doors (of body, speech and mind), I, in this world of five defilements for the benefit of sentient beings, explain the way (to the final bliss)."[2]

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[1] The original reads: "Sa-la-h̲i-ta" which seems to be a wrong spelling for "Ka-la-ha" meaning "quarrel" or "dispute." The Tibetan substitute for it is "I̲lkhrul" which should better be rendered by "Bhrama."

[2] སྟོན་པ་འཇིག་རྟེན་སྒྲོན་མ་དང་།།
ཉོན་མོངས་ནང་སེལ་བདུད་རྩིའི་ཆོས།།

It was translated into Tibetan by the Indian sage Sarvajña-deva and the interpreter Vande-d̲pal-b̲rtsegs of Shu-chen. The Tibetan version begins with a salutation to Mañju-śrī-kumāra-bhūta, and ends with the following benediction :—"May this be profitable to the doctrine and sentient beings!"[1]

[This is also not a work on logic, but a treatise on the Mādhyamika philosophy, replete with logical arguments.]

19. Madhyamaka-hṛdaya-vṛtti-tarka-jvālā (Tib. D̲wu-mah̲i-sñiṅ-poh̲i-h̲grel-wa-ṛtog-ge-h̲bar-wa)—"A flame of discussions rising from the commentary on the Madhyamaka-hṛdaya" by teacher Bhavya.

The work extends over folios 40—360 of the Tangyur, M̲do, *Dsa* (ཛ). It was translated into Tibetan and published by the Indian sage Dīpaṅkara-śrījñāna and the Tibetan interpreter-monk Tshul-khrims-ṛgya-wa in the monastery of Ra-sa-h̲phrul-snaṅ in Lhasa. The Tibetan version begins with a salutation to the Omniscient One (Buddha).

[This is a work on the Mādhyamika philosophy replete with logical arguments].

POST-SCRIPT.

The materials of the following portion are derived from two volumes of the Tangyur, borrowed from the India Office, through the kind intervention of Mr. F. W. Thomas.

19. Santānāntara-siddhi-ṭikā (Tib. R̲gyud̲-gshan-grub-pah̲i-b̲grel-b̲śad̲)—Establishment of the continuity of the series (of thoughts).

The work, which extends over folios 1—21 of the Tangyur, M̲do, Tshe (ཚེ), begins with a salutation to Buddha thus :—

སྦྱོབ་དང་མི་སྦྱོབ་ལ་སོགས་ལ།།
སྦྲོ་གསུམ་དང་བས་ཕྱུག་འཚལ་ཏེ།།
སྙིགས་མ་ལྔ་ཡི་འཇིག་རྟེན་འདིར།།
འགྲོ་ལ་ཕན་ཕྱིར་ལམ་བཤད་པ།།

(Tangyur, M̲do, Tsha, folio 18).

འདིས་བསྟན་པ་དང་སེམས་ཅན་ལ་ཕན་ཐོགས་པར་གྱུར་ཅིག།

(Tangyur, M̲do, Tsha, folio 21).

"The preceptor of the world by whom all this was explained in mere thoughts—to him fully, bowing down I prepare the Santānāntara-siddhi."[1]

It was composed by teacher Vinīta Deva (Tib. Dul-wahi-lha), and was translated into Tibetan by the Indian sage Viśuddha-siṁha and the interpreter of Shu-chen named Dpal-rtsegs-rakṣita. The Tibetan version begins with a salutation to Mañju-ghoṣa (Tib. Hjam-pahi-dwyangs).

20. Vāda-nyāya-vṛtti-vipañcitārtha (Tib. Rtsod-pahi-rigs-pahi-hgrel-pa-don-rnam-par-hbyed-pa)—An analytical commentary on the Vāda-nyāya (logical discussions).

This work, which extends over folios 21—131 of the Tangyur, Mdo, Tshe, begins with a salutation to Buddha thus:—

"Who by the lustre of the heap of various pure precious qualities perpetually subduing darkness, endeavoured for the sake of obtaining the fruits of the desires of various sentient beings, and was pleased to do good to the entire world—to that Mañjuśrī bowing down in reverence I begin in brief to compose this Vāda-nyāya-vipañcitārtha."[2]

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[1] འགྲོ་བའི་བླ་མ་གང་ཞིག་གིས །།
འདི་ཀུན་སེམས་ཙམ་དུ་གསུངས་པ །།
དེ་ལ་རབ་ཏུ་ཕྱག་འཚལ་ནས །།
རྒྱུད་གཞན་གྲུབ་པ་དབྱེ་བར་བྱ །།

(Tangyur, Mdo, Tshe, folio 1).

[2] སྣ་ཚོགས་ཡོན་ཏན་དམ་པ་རིན་ཆེན་ཕུང་པོ་ཡི་འོད་ཀྱིས་རྟག་ཏུ་མུན
པ་བཅོམ་གྱུར་ཅིང་ །།
གང་ཞིག་ རྣམ་ པ་ སྣ་ཚོགས་སེམས་ཅན་འདོད་པའི་འབྲས་བུ་ཐོབ
པའི་དོན་དུ་བརྩོན་གྱུར་པ །།
མ་ལུས་འགྲོ་ལ་ཕན་པ་སྐྱིད་པར་དགྱེས་པ་འཇམ་དཔལ་དེ་ལ་གུས
པར་ཕྱག་འཚལ་ནས །

The author of the work was the great teacher S'ānta-rakṣita. It was translated into Tibetan in the sacred monastery of Sam-ye (Bsam-yas) by the Indian sage Kumāra-śrī-bhadra and the Tibetan interpreter Gelong Hphags-pa-śes-rab and Seṅ-ḍkar of the province of Hbro (Dö). The Tibetan version begins with a salutation to Mañjū-śrī-kumāra-bhūta.

21. Pramāṇa-vārtika-vṛtti (Tib. Tshaḍ-ma-ṛnam-ḥgrel-gyi-ḥgrel-pa)—Explanatory notes on the Pramāṇa-vārtika.

The work, which extends over folios 132—252 of the Tangyur, Mdo, Tshe (ཚེ), was composed by teacher Ravi-Gupta (Tib. Ñi-ma-ṣbaṣ-pa). It ends with chapter 11 which treats of the characteristics of the Pramāṇa (Tib. Tshaḍ-maḥi-ṃtshan-ñid). The Tibetan version begins with a salutation to Mañju-śrī Bodhi-sattva (Tib. Hjam-ḍpal-ye-śeṣ-semṣ-ḍpaḥ).

22. Pramāṇa-viniścaya-ṭikā (Tib. Tshaḍ-ma-ṛnam-par-ṅeṣ-paḥi-ḥgrel-ḇśaḍ)—Explanatory notes on the Pramāṇa-viniścaya.

This work, which extends over folios 1—346 constituting volume *Dse* (ཛེ) of the Tangyur, section Mdo, begins with a salutation to Buddha. It was composed by the Kāśmirian teacher Jñāna-śrī. The work ends at chapter II. The Tibetan version begins with a salutation to Mañju-śrī-kumāra-bhūta.

23. The same volume contains Pramāṇa-viniśeaya-ṭikā, part I, by Dharmottara.

ཚད་པའི་རིགས་པ་རྣམ་པར་འབྱེད་པ་དྲི་མ་དང་བྲལ་མདོར་བསྡུས་
པའདི་བརྩམ་པར་བྱ།།

(Tangyur, Mdo, Tshe, folio 21).

59. Note on the Blue or Common Heron *(Ardea Cinerea).*

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

Vernacular names: in the Kapurthala State *būtīmār;* in some parts of the Punjab *naṛī*, a name that in Kapurthala distinguishes the purple heron (*ardea purpurea*); in the Derajat *bilā,ī;* in Sindh *chilam;* in Kashmir *brag;* in the Bannun District *haveza;* in the Kohat District *chīlāng*, a name sometimes there applied to storks as well; in Parachinar, Kurram Valley, *hukāra;* in Hyderabad, Deccan, *kabūd* (blue); in Oudh and the North-Western Provinces *kabut*, *anjan* and *bhād.*[1]

In Persia the Common Heron is called *'úqār*, *ḥuqār*, *māhī-k̲h̲ur*, and *būtimār.*

The weight of an old, large, bird hawked by me was 3 lbs. 8¾ oz.

The heron is a permanent resident in India, breeding throughout the country. Numbers, however, are migratory, entering the Punjab in September-October and leaving in February-March. In the Punjab, in these last two months, large flocks migrate up the big rivers.

Large numbers of the Common-, Purple-, Night-heron, and other water birds breed during the rains in the Cavalry grass-*rak̲h̲* at Paharpur, Dera Ismail Khan. Though the monsoon does not extend to the Derajat, its effects are felt there to a certain extent; the river rises and floods the *rakh.*

In Kashmir the herons commence building early in spring, nesting in the same tree, a lofty plane, as Night-Herons, Egrets, and other birds. In one tree in a village I counted thirty nests of the common heron alone, while a kite, some crows, a few mainas, and several other birds built in the same tree Gilbert White, letter XXII, alludes to four-score nests being in one tree, at Cressy Hall, near Spalding, in Lincolnshire.

The young remain in the nest a long time after they are apparently full-grown. Fresh eggs and full-grown young are frequently found in the same nest. The noise and fuss in a herony, during the breeding season, is considerable, and the old birds often leave the trees and settle on the ground at a short distance, to rest. The mutes, white and chalky like those of hawks, are ejected by the young over the edge of the nest,[2] and seem very injurious to the life of the tree. The tops of the plane trees in which there are heronries are usually dead. There was one large herony in the Shalimar Garden (Kashmir), but it was deserted some years ago as the whole of the tree-tops had died. Fresh fish are daily dropped by herons from their nests, but once dropped are never retrieved.

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[1] *Bhad* is properly the Oudh name of the purple heron. This latter is in Kapurthala called *naṛī*, in Sialkot *jāh;* in Chhach-Hazara *k̲h̲arkār;* and in Bannu *chīndak̲h̲-k̲h̲urai* or "frog-eater." In Persia it is named *jarda.*

[2] There is consequently no affectionate sanitation as in the case of starlings. How do owls keep their abodes clean? Like starlings they build in holes, but the mutes of the former do not admit of transportation.

A small parasite, something like a grain of linseed, is found in the mouth of common herons [1] in the Punjab, both in the wild state and in captivity. This parasite is abundant in spring. It is apparently transmitted by fish, for I found that it nearly disappeared in captive herons when they were fed chiefly on frogs and meat. In captivity herons will eat rats, young pigeons, quails,[2] and meat, besides, of course, frogs and fish.

That a hawked heron casts up fish is a fact well known to falconers. That fish so cast up are always fresh and not partially digested, indicates that they are cast up from the crop, and not from the stomach. It is supposed that the heron empties its 'creel' with the object of lightening itself, preparatory to 'ringing up' before the hawk. The vomiting is, however, I think, involuntary, and the result of fear; for a newly-caught heron will always, for the first two days of its captivity, vomit up any fish that it has just swallowed, if a human visitor approaches its enclosure. It will do this without leaving its perch, or the corner in which it is crouching. By the third day it usually becomes accustomed to the human presence and ceases to vomit. Further, a hawked heron that has no intention of 'ringing up,' one that will not leave the shelter of a deep nullah let the field gallop as hard as it may, will still vomit up freshly-caught fish, even when the delay this occasions places it at a disadvantage and endangers its life.

A hawked heron will sometimes splash into deep water like a duck, or plunge into the dense foliage of a baniyan tree and refuse to quit. I have heard of one diving into a flock of sheep. The eyes of a newly-taken heron should be at once 'seeled.' If the skin of the neck has been torn by the hawk, it should be sewn up, if possible on the spot, and some ointment applied. (However bad the injuries, if this is done, the herons will probably recover: if, however, these precautions are neglected, they frequently die of their injuries.) The heron should then be 'mailed,' or put in a sock, the legs being stretched out behind as in flying. If the heron is carried with its legs doubled up, it will catch an incurable 'cramp.' If tapes be sewn on to the sock, herons can be suspended on the hat-pegs of a railway carriage and transported long distances by rail: they certainly suffer no injury, and seemingly no inconvenience, for three days.

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[1] I do not recollect having found this parasite in the purple-heron or in the night-heron. If it attacks the two last, it does so rarely.

[2] I once gave a tame white stork, a live quail with shortened wings. The stork chased it in the long grass, caught it, 'chopped' it, and tried to swallow it. Evidently finding the feathers too dry, it stalked over to its stable-bucket at the other side of the compound, soused it in water, 'chopping' all the while, and then swallowed it whole with ease. The same bird used to get into the pigeon-house and eat half-fledged squabs.

Newly-caught herons generally sulk and refuse to feed till they have lost much flesh and have become too weak to fly. If there are no tame herons to guide them, they should, for a day or two, be fed by hand, frequently but sparingly; not more than one, or two, small fish the size of a sardine being given at a time. If meat has to be given, it should be chopped up and mixed with water, and a little fine river-sand should be added. After the meal, a strip of rag should be tied round the throat, at the bend of the neck closest to the head. If tied on too low down, the heron will get its lower mandible wedged under the bandage. At first the heron will try to vomit up its meal, but after many failures it will desist. If full meals are at first given, the heron's repeated attempts to vomit produce a dangerous form of indigestion. By the fourth day the heron will have lost only a little flesh, but will have acquired a voracious appetite. Its eyes may now be unseeled and it may be turned loose in an enclosure. It will eat of its own accord, probably even meat.

Herons are very intelligent—or cunning, though there is something about their head that irresistibly reminds one of a degenerate.

For two methods of snaring herons and water-fowl in the Punjab, Sindh and Kashmir, *vide* Journal, Asiatic Society, Bengal, Vol. III, No. 6, 1907 In Oudh herons are said to be caught in snares baited with a rat.

60. Note on Indian Hawk-bells.

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

Indian hawk-bells, light and sonorous, are justly valued even in Europe. Their manufacture is now confined to two villages in the Punjab, the village of Kallar in the Rawal Pindi district being the more famed of the two. The method of manufacture, or rather the method of tempering, is a trade secret, jealously guarded. It is said that the bells are not cast, but moulded in two separate pieces with a hammer, on an iron mould. The two pieces are then joined, the ring being affixed last of all. Indian falconers call hawk-bells *zīl* and *zang*. The weight of the largest size, that for a goshawk, is 9·5 grammes, and that of the size usually worn by peregrines, 7 3 grammes; a smaller size is 5 2 grammes. The average price is eight annas a pair. A bell rarely preserves its tone a whole season, but occasionally an extra-good bell is found that will last two seasons or even more. Indian falconers cleanse bells that have lost their tone with hot wood-ashes, but if this restores the tone, it does so only partially.

The *Boke of St. Albans*, treating of bells, tells us to, "Looke also that thay be sonowre and Well sowndyng and shril and not both of oon sowne: but that oon be a semytoyn under a noder." Some such practice was current amongst Indian falconers too, who considered that hawk-bells should not both be of 'oon sowne,' but *nar u mada*, "male and female."

Major F. T. C. Hughes, Deputy Assay Master, Calcutta Mint, has kindly analysed one of the Kallar-made bells and reports that it contains:—

Copper	61·0 p.c.
Zinc	38·0 „
Impurities (principally lead with traces of tin and iron)	1 „

61. *Anguillicarpus*—a new genus of the Cruciferae.

By I. H. Burkill.

Among the plants sent to me with economic notes by Mr. R Hughes-Buller, lately Superintendent of the Imperial Gazetteer, Baluchistan, is a Crucifer which I can not quite force into the genus *Spirorhynchus*, and for which the name *Anguillicarpus Bulleri* is here proposed. Its curious and characteristic fruit is figured below, by the side of a copy of Prantl's figure of that of *Spirorhynchus sabulosus*, Karel. et Kiril. Both fruits are seen to be long-beaked, and to be sterile for a part towards the base. That of *Anguillicarpus* differs from that of *Spirorhynchus* in the length

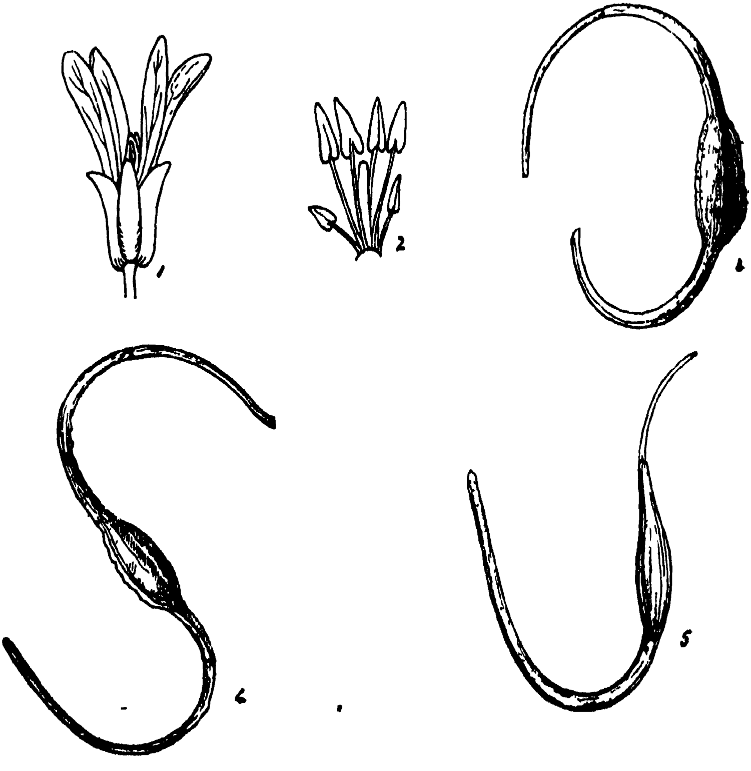

Fig. 1. Flower of *Anguillicarpus Bulleri* × 3. Fig 2 Stamens Figs. 3 & 4. Fruits × 4: the latter figure drawn from a pressed fruit probably does not so naturally present it as the former. Fig 5. Fruit of *Spirorhynchus sabulosus*, after Prantl.

of this sterile base, in the four narrow wings which bring it towards the genus *Boreava*, and in the snout being but very little flattened; while in the flower the two genera differ as follows:—

Anguillicarpus.	*Spirorhynchus.*
Sepals, two of them saccate	none saccate.
Nectaries, present	absent.
Anthers, six	four.
Filaments, all free	longer united in pairs.

I count these differences in the flower as of uncertain value, seeing that sometimes in the Cruciferae they characterise genera, and sometimes they fail to do so, as for instance in the reduction of the stamens in *Cardamine hirsuta*, Linn., or the complete fusion of pairs of filaments and anthers in some species of *Lepidium* and *Senebiera*: but nevertheless though of uncertain value they are to be reckoned with.

The position of *Anguillicarpus* in the linear arrangement of the order is between *Spirorhynchus* and *Boreava*. Other allied genera, but not so nearly allied, are *Calepina* and *Sameraria*. The reduced genus *Hussonia* (reduced to *Erucaria*) has a superficial resemblance in fruit. *Spirorhynchus sabulosus* has a suspended, elongated seed [1] like that of *Anguillicarpus*; whether it shows signs of an aborted ovule below it or not I am unable to say. The flattened part of the beak in *Anguillicarpus* is apparently the style, while the quadrangular part is transformed out of the top of the ovary.

ANGUILLICARPUS. Genus monotypicum, ex affinitate Spirorhynchi et Boreavæ inter Cruciferas. Herba glabra. Stigma bilobum. Fructus indehiscens, elongatus. Embryo ad collum deflexus. Cotyledones incumbentes, fere plani. Characteres præcedentes sunt Sisymbriinarum. Inter Sisymbriinas distinguitur floribus melliferis, staminibus omnibus fertilibus, filamentis liberis, fructibus nec dehiscentibus nec articulatis nec planis, seminibus singulis elongatis.

Anguillicarpus Bulleri. *Herba* glabra, erecta, 25 cm. alta, fere ex basi ramosa, ramulis aliquomodo intertextis; rami gradatim in racemos transeuntes. *Folia* inferiora anguste runcinato-pinnatisecta, longiora ad 4 cm. longa, dentibus remotioribus subæqualibus acutis deflexis vel patulis sæpius subopposítis subtriangularibus 2 mm. longis; folia superiora linearia, margine subæquali. *Racemi* laxi: pedicelli 3-4 mm. longi. *Flores*, ut videtur, lilacini. *Sepala* biformia, altera basi gibbosa, altera basi rotundata, 3 mm. longa. *Petala* ligulata, apice subrotundata, pinnatinervia, 8 mm. longa. *Stamina* sex, longiora libera sepala paullulo superantia, breviora

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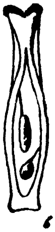
[1] Boissier in his Flora Orientalis i. (1867) p. 385, wrote " Semen erectum " : but Prantl (in Engler u. Prantl, Pflanzenfamilien, iii., pt. 2, 1892, p. 171) wrote : " Samen hangend," with a note of exclamation after it to denote that he was positive on the point.

longiorum antheras vix attingentia. *Pistillum* staminibus brevibus æquilongum, post anthesim decurvum, ovulis geminis, superiori solum perfecto; stigma bilobum, flore expanso multo increscens; stylus anguste bialatus. *Fructus* dependens et uniovulatus et longipes, parte ovarii subovulari ad pedem 7-8 mm. longum transformata, et enim longirostratus, rostro 10-12 mm. longo ex stylo parteque ovarii supraovulari producto: fructu maturo pedicellus basi abruptus.

Habitat in Beluchia ad Kharan prope Quetta: sub numero 23193, Herb. R. E. P., collegit R. Hughes-Buller. Incolæ *Hushtirkah* vocant et pro pabulo ovino camelinoque ferunt.

Olim *Spirorhynchus* inter Cruciferas solus ob fructum singularem distetit; nunc *Anguillicarpo* addito genera duo coram hoc modo notata distant. Hoc fructu quadrialato longipedi et filamentis liberis et staminibus brevibus fertilibus discretum est: illud fructu brevipedi et staminibus longioribus per paria connexis.



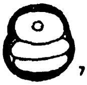
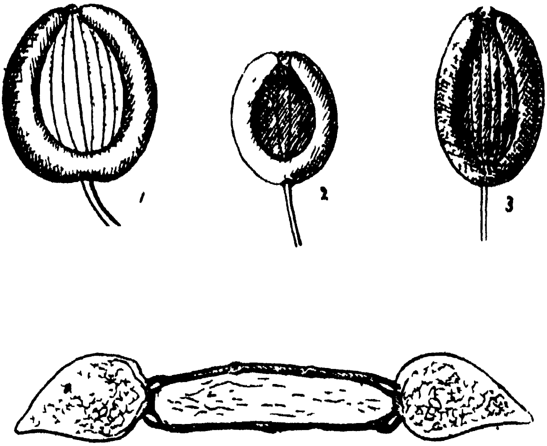


Fig. 6. The pistil of *Anguillicarpus Bulleri*, diagramatic. Fig. 7. The seed in section.

62. A variety of *Ducrosia anethifolia* Boiss., from Baluchistan.

By I. H. BURKILL.



Fruits of *Ducrosia anethifolia*, Boiss Fig 1, after Jaubert and Spach, × 3 Fig. 2, from Dr Stapf's plant, × 3. Fig 3, var *Jamiatii*, × 3. Fig 4, mericarp of var *Jamiatii* in section at the middle, × 14

Ducrosia anethifolia was described as *Zozimia anethifolia* by De Candolle in his Prodromus, iv. (1830), p. 196, from specimens collected by Olivier and Bruguière between Teheran and Ispahan. The name now adopted, i.e, *Ducrosia anethifolia*, was given by Boissier in the Annales des Sciences Naturelles, 3me Sèrie, i. (1844) p. 342; and he identified Aucher-Eloy's nos. 3596 and 4577 from Ispahan with Olivier and Bruguière's specimens collected about Teheran and Ispahan. At the same time he described *Ducrosia flabellifolia* based on Olivier and Bruguière's specimens from between Bagdad and Alep and Aucher-Eloy's no. 3729 from the deserts of Assyria, as they differed in leaf somewhat. Jaubert and Spach in their Illustrationes Plantarum Orientalium, iii., Paris, 1847 1850, tab. 238, united the two species of Boissier under the name *Zozimia anethifolia*: but Boissier in his Flora Orientalis, ii., 1872, p. 1036, says that Jaubert and Spach's figure is of his *Ducrosia anethifolia*, and not of *D. flabellifolia*.

A bit of Jaubert and Spach's illustration is reproduced as no. 1 of the figures above. A fruit from a plant collected in Persia on Kuh Sofah near Ispahan by Dr. O. Stapf is figured in no. 2. It will be seen that they agree in everything but size. Figures 3 and 4 are from a plant collected by Mr. Hughes-Buller's staff at Hindubagh in Baluchistan. The fruits are seen to be as long as Jaubert and Spach represent them, but to differ somewhat in shape.

I have cut sections across the mericarps of both Mr. Hughes-Buller's plant and Dr. Stapf's: and find them in section exactly alike in everything but size. Jaubert and Spach make the swollen rim relatively a little broader.

The variety is here named var. *Jamiatii* after Rai Saheb Diwan Jamiat Rai, of Mr. Hughes-Buller's staff.

Ducrosia anethifolia, var. *Jamiatii*, a typo distinguitur fructibus late ovatis nec rotundatis. Habitat in Baluchia ad Hindubagh quo loco inter alias plantas pabulum camelis ovibusque præbet. Nomen *Khór-kundái.* Collegit R. Hughes-Buller sub numero 19884, Herb. R.E.P.

63. A note on *Impatiens Balsamina*, Linn., as a dye-plant.

By I. H. Burkill

The distribution of this Balsam seems to be very wide. Its home is in the north-western Himalaya, and it is found wild all down the Western Ghats. It may be seen in village gardens in many parts of India, and it appears to be quite commonly sown in the clearings among the hills south of the Brahmaputra and down to Arakan. So much regarding its distribution: now regarding its use as a dye.

Stewart in his "Panjab Plants" (Lahore, 1869), p. 36, has the following sentence: "Madden states that *Impatiens Balsamina* flowers (?) are in Gurhwal used for a dye, whence it is called majiti." Sir George Watt in his "Economic Products of India exhibited in the Calcutta International Exhibition 1883-1884" (Calcutta, 1883), vol. i, pt. 2, p. 33, remarked that the use required confirmation. In the "Dictionary of Economic Products" (article *Impatiens Balsamina*, para. I. 40), he quotes Madden and adds that he had received from the Jaintea hills specimens stated to be used by the inhabitants for dyeing red, the leaves for that purpose being bruised together with some substance called *metchta langa*. That the leaves should be used seems improbable. Duncan (Monograph on Dyes and Dyeing in Assam, Shillong, 1896, p. 28) quotes Watt and remarks that he had been unable to secure further information from the Jaintea hills on this use, and that the plant though probably found in gardens all over the district, appeared not to be used as a dye anywhere but in the Jaintea hills.

The following gives a use for the flowers, which one man might call dyeing and another not; and therein it suggests an explanation for the measure of contradiction that there is in the statements of the Dictionary of Economic Products and Duncan's monograph. I publish it hoping that some one may be interested in following the matter up.

When in January last I found *Impatiens Balsamina* on the hill clearings of Chins on the Pi-choung, at the southern border of the district of Northern Arakan, and again on the hill clearings of Chaungthas,[1] high up the Kalapanzin river, in the district of Akyab, I began to ask questions about it; and I was told that the Changthus (women of the Chaungthas) sometimes twist the flowers into their hair; and that the children play with them dyeing their finger nails.

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[1] Descendants of Talaings taken prisoners by the Arakanese who planted them in colonies as wardens of their northern marches. Force of circumstances has driven the Chaungthas to copy the way of cultivation of the Chins. The word Chaungtha means villager of the hill valleys.

It is not improbable that the use in the Jaintea hills is just as unimportant and obscure.

Sir Joseph Hooker has been so good as to name the balsam authoritatively for me.

Any one may readily observe that the rose-purple flowers do contain a considerable amount of colouring matter, by rubbing one between the finger and thumb: and if they be rubbed on to a piece of paper, a rose colour is given to it which will persist for months out of the sun: but in the sun it fades quickly.

Other species of *Impatiens* are said to give a red dye, e.g., *Impatiens Griffithii*, Hook. fil. et Thoms., in the Malay Peninsula (see Ridley in Journ. Roy. Asiatic Soc., Straits Branch, no. 30, 1897, p. 103) Further it is said, on authority unknown to me, that the Tartars dye their finger nails with sundry species of *Impatiens*.

64. Rock Drawings in the Banda District.

By C. A. Silberrad, I.C.S.

During a four-years' residence in the Banda district of the United Provinces, I have taken the opportunity of visiting four places where there are "drawings" in red ochre on bare surfaces of the Vindhyan sandstone that forms the hills in the south and south-east of the district. In three cases the "paintings" are situated on more or less vertical portions of rock forming part of the cliff, locally known as the "ari" at the top of the scarp. In the fourth case (Karpatia) the drawings are on an exposure of rock well above and beyond the edge of the scarp In two cases (Malwa and Sarhat) the drawings are at the top of the lowest scarp. in one (Kuria Kund) near the top of the second scarp, while the fourth (Karpatia), as already noted, is above the second scarp.

I proceed to give a brief account of each occurrence:—

(1) *Sarhat.*—The drawings are situated on the top of the scarp about 1½ miles N.-W. of the Manikpur Railway Station on the Allahabad-Jubbulpore branch of the E.I. Railway. Fig. 1 is a tracing of the best group of drawings This group consists of three horses caparisoned and led by men apparently armed with some sort of weapon, which looks more like a wooden bludgeon than anything else. About this group but less well preserved, are an elephant and a man shooting a Sambhar stag with bow and arrow. At a short distance S.-E. of this set of drawings is a much more indistinct group, amongst which there appears to be a man on horseback and a few other figures.

(2) *Malwa.*—Three-fourth mile S.-E. of the village of Gurhrampur, some 16 miles south of the Badausa Railway Station on the G.I P. Railway, and close to the border of the State of Pathar-Kachar The "ari" here is not precipitous and the drawings are just below the top. Fig II is a tracing of the best drawings. There are some other drawings—consisting of two men and two or three animals, but not clear enough to tell what may be meant. The drawing traced appears to be that of some man of position riding in a wheel-less bullock cart, with an attendant holding an umbrella over his head and escorted by two bowmen.

(3) *Kuria-Kund.*—In Mauza Kathauta Mamaniyan about three miles S.-E. of the inhabited site and 12 miles S.-E. of Manikpur Railway Station. The drawings are situated on the "ari" of the second scarp near the head of the valley that runs N.-E. to join the valley running N.-W. past Kathauta-Mamaniyan towards Ranipur Kalyangarh. The drawings consist of several archers on horseback pursuing what are probably meant to represent Sambhar

stags. The size of the drawings is approximately that of those previously described.

(4) *Karpatia.*—These are situated in Panna territory about ½ mile south of the border and 1¼ miles south of the Chaunri Forest bungalow, which is 12 miles S.-S.-E. of Manikpur Railway Station. Here the drawings are more numerous, but show few signs of any mutual connection and are poorly executed. There are several crude representations of men and at least one bird.

I have been told that there are other drawings of a similar character at (5) some four miles south of Kalyanpur and so about 11 miles south of Manikpur Railway Station and three miles north of the village of Amwan in Panna territory. (6) In Mauza Uldan on the "ari" close to the Burasih Ghâti, some two miles S.-W. of Ranipur-Kalyangarh and eight or nine miles S.-E. of Manikpur Railway Station; and (7) on a hill some eight or ten miles south of Bargarh Railway Station on the E.I. Railway. These three localities I have been unable to visit and so am not able to say for certain whether the drawings are similar to those I have seen.

As regards the origin of these drawings I am unable to offer any suggestions; there appear to be absolutely no local legends about them, the residents whom I have questioned merely asserting that they are very old. I believe the late Mr. Cockburn has described similar drawings in the Mirzapur district.

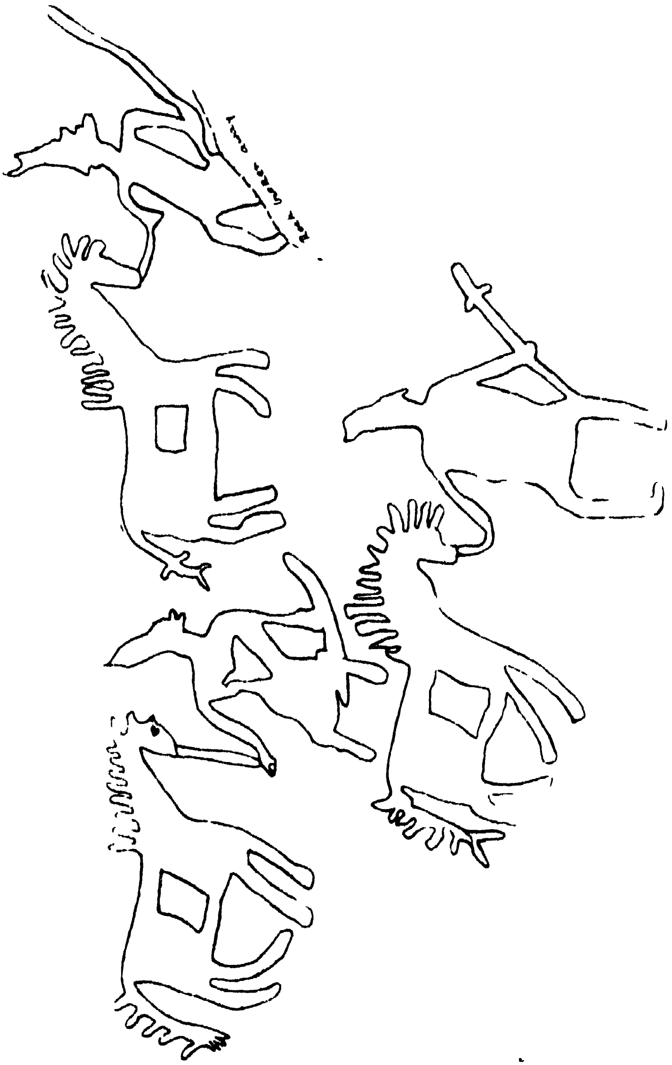


Fig I.

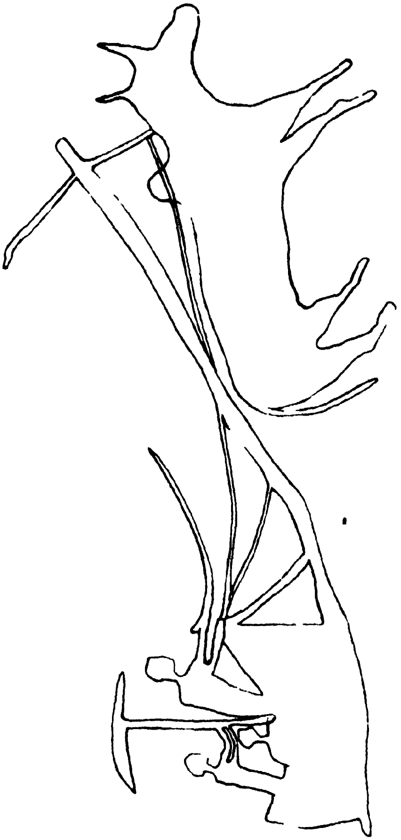
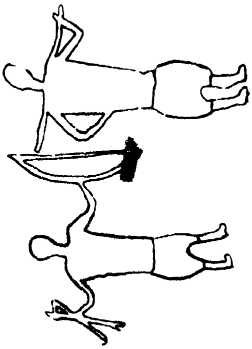


Fig. II



65. The Sāṁkhya Philosophy in the Land of the Lamas.

By Mahāmahopādhyāya Satis Chandra Vidyabhusana, M.A.

The block-prints noticed below belong to the monastery of Labrang in Sikkim, which I visited in June 1907.

1. Tattva-saṁgraha-kārikā (Tib.: དེ་ཁོ་ན་ཉིད་བསྡུས་པའི་ཚིག་ལེའུར་བྱས་པ)—Memorial verses on the abridgment of the Tattvas.

The work, which extends over folios 1–146 of the Tangyur, M̱do, H̱e, was composed by teacher S'ānta-rakṣita (Tib.: ཞི་བ་འཚོ) and begins with a salutation to Buddha.

It examines the doctrines of many philosophical sects, though in its technology it belongs to the Sāṁkhya system. It is a *prakaraṇa* and not written in the sūtra or aphoristic style. The subject-matter of the work begins thus:—

"From the Pradhāna (primordial matter or nature) possessed of entire powers all sorts of effects are produced."[1]

The work is divided into 31 chapters named respectively (1) རང་བཞིན་བརྟག་པ (स्वभाव-परीक्षा)—examination of nature. (2) དབང་ཕྱུག་བརྟག་པ (इन्द्रिय-परीक्षा)—examination of the sense-organs. (3) གཉིས་ཀ་བརྟག་པ (उभय-परीक्षा)—examination of both, (4) འགྲོ་བ་རང་བཞིན་དུ་སྨྲ་བ་བརྟག་པ (जगत्-स्वभाव-वाद-परीक्षा)—examination of the theory that the world is self-existent,

[1] ནུས་པ་མ་ལུས་དང་ལྡན་པའི།།
གཙོ་བོ་ཉིད་ནི་འབའ་ཞིག་ལས།།
འབྲས་བུའི་ཁྱད་པར་རབ་སྐྱེ་སྟེ།།
(Tangyur, M̱do, H̱e, folio 1).

(5) སྒྲའི་ཚངས་པ་བརྟག་པ (शब्दब्रह्म-परीक्षा)--examination of Brahma, the presiding deity of the sound, (6) སྐྱེས་བུ་བརྟག་པ (पुरुष-परीक्षा)—examination of the spirit, (7) རིགས་པ་ཅན་དང་བྱེ་བྲག་པས་ཀུན་དུ་བརྟགས་པའི་སྐྱེས་བུ་བརྟག་པ (न्याय-वैशेषिक-परिकल्पित-पुरुष-परीक्षा)—examination of the Nyāya and Vaiśeṣika doctrines of the spirit, (8) སྤྱོད་པ་པས་བརྟགས་པའི་བདག་བརྟག་པ (मीमांसक-कल्पित-आत्म-परीक्षा)—examination of the Mīmāṁsaka doctrine of the soul, (9) སེར་སྐྱ་པས་ཀུན་དུ་བརྟགས་པའི་བདག་བརྟག་པ (कपिल-परिकल्पित-आत्म-परीक्षा)—examination of Kapila's doctrine of the soul, (10) ནམ་མཁའི་གོས་ཅན་གྱིས་ཀུན་དུ་བརྟགས་པའི་བདག་བརྟག་པ (दिगम्बर-परिकल्पित-आत्म-परीक्षा)—examination of the Digambara Jain doctrine of the soul, (11) ཨ་པ་ནི་ཥ་རིགས་བརྟགས་པའི་བརྟག་པ (उपनिषद्-कल्पित-आत्म-परीक्षा)—examination of the Upaniṣad doctrine of the soul, (12) གནས་མའི་བུས་བདག་བརྟག་པ (वात्सीपुत्र-कल्पित-आत्म-परीक्षा) —examination of the Vātsī-putra doctrine of the soul, (13) བརྟན་པའི་དངོས་པོ་བརྟག་པ (स्थिरपदार्थ-परीक्षा)—examination of the permanence of entities, (14) ལས་དང་འབྲས་བུའི་འབྲེལ་པ་བརྟག་པ (कर्म्मफल-सम्बन्ध-परीक्षा)—examination of the relation between *Karma* and its effect, (15) རྫས་ཀྱི་ཚིག་གི་དོན་བརྟག་པ (द्रव्य-पदार्थ-परीक्षा)—examination of the meaning of the word 'substance,' (16) ཡོན་ཏན་གྱི་ཚིག་གི་དོན་བརྟག་པ (गुणशब्दार्थ-परीक्षा)—ex-

amination of the meaning of the word 'quality,' (17 ལས་ཀྱི་ཚིག་གི་དོན་བརྟག་པ (कर्म्मशब्दार्थ-परीक्षा)—examination of the meaning of the word *Karma*. (18) སྤྱིའི་ཚིག་གི་དོན་བརྟག་པ (सामान्य-शब्दार्थ-परीक्षा)—examination of the meaning of the word generality or genus, (19) སྤྱི་དང་བྱེ་བྲག་གི་ཚིག་གི་དོན་བརྟག་པ (सामान्य-विशेष-शब्दार्थ-परीक्षा)—examination of the meaning of the words 'generality' and 'particularity,' (20) འདུ་བའི་ཚིག་དོན་བརྟག་པ (समवाय-शब्दार्थ-परीक्षा)—examination of the meaning of the word 'inseparable connection,' (21) སྒྲ་ཡི་དོན་བརྟག་པ (शब्दार्थ-परीक्षा)—examination of the meaning of the word 'sound,' (22) མངོན་སུམ་གྱི་མཚན་ཉིད་བརྟག་པ (प्रत्यक्ष-लक्षण-परीक्षा)—examination of the definition of perception, (23) རྗེས་སུ་དཔག་པ་བརྟག་པ (अनुमान-परीक्षा) –examination of the inference, (24) ཚད་མ་གཞན་བརྟག་པ (प्रमाणान्तर-परीक्षा)—examination of the other kinds of valid knowledge, (25) འགྱུར་བར་སྨྲ་བ་བརྟག་པ (विवर्त्तवाद-परीक्षा)—examination of the doctrine of change, (26) དུས་གསུམ་བརྟག་པ (कालत्रय-परीक्षा) examination of the three times, (27) འཇིག་རྟེན་རྒྱུད་པའི་བརྟགས་པ (संसार - सन्तति - परीक्षा)—examination of the continuity of the world, (28) ཕྱི་རོལ་གྱི་དོན་བརྟག་པ (बाह्यार्थपरीक्षा)—examination of the reality of the external world, (29) ཐོས་པ་བརྟག་པ (श्रुति-परीक्षा)—examination of the *Sruti* or Scripture, (30) རང་ལས་ཚད་མ་བརྟག་པ (स्वतःप्रमाण-

परीक्षा)—examination of the self-evidence, and (31) གཞན་གྱི་དབང་པོ་ལས་འདས་པའི་དོན་མཐོང་བ་ཅན་གྱི་སྐྱེས་བུ་བརྟག་པ (अन्येन्द्रियातीतार्थदर्शन-पुरुष-परीक्षा)—examination of the spirit which sees things beyond the senses of others.

The author of the work was teacher S'ānta-rakṣita (ཞི་བ་འཚོ).

It was translated into Tibetan in the province of Guge (S. W. Tibet) by the great Indian Pandit Guṇākara-śrībhadra (of the religious circle instituted by the great king Lalitaditya in the unparalleled town of Kāśmīra) and the great Tibetan interpreter, the S'akya Gelong Lha-ḇla ma Shi va ẖoḏ. The Tibetan version begins with a salutation to Mañjuśrī Kumāra-bhūta.

2. Tattva-saṁgraha-pañjikā (Tib.: དེ་ཁོ་ན་ཉིད་བསྡུས་པའི་དཀའ་འགྲེལ)—Explanation of the difficulties in the Tattvasaṁgraha.

The work, which extends over folios 146—400 of the Tangyur, m̱do, ẖe, was composed by Kamala-śrīla.

It begins with a salutation to Buddha thus:—

"Who by means of churning the ocean of the knowables has pacified the miseries arising from attachment, etc., for worldly objects, who has made the world content by mercifully enabling them to comprehend the *tattvas*—to that most excellent of the *tattvas*, the teacher of sentient beings, reverentially bowing down I commence for the sake of elucidation (of the text) the Tattvasaṁgraha-pañjika." [1]

གང་ཞིག་ཤེས་བྱའི་རྒྱ་མཚོ་བསྲུབས་པའི་སྟོབས་ཀྱིས་གཞན་དོན་ང
རྒྱལ་བ་ལ་སོགས་ཀྱི།།
སྡུག་བསྔལ་ཞི་བྱེད་དེ་ཉིད་རྟོགས་པའི་བདུད་རྩི་ཐུགས་རྗེས་འགྲོ་བ
ཚིམ་མཛད་པ།།
དེ་ཉིད་ནི་མཆོག་འགྲོ་བ་རྣམས་ཀྱི་སྟོན་པ་དེ་ལ་གུས་པས་ཕྱག
འཚལ་ནས།།

The Tibetan version begins with a salutation to Mañjuśrīkumārabhūta.

3. Tattva-saṁgraha-pañjikā (Tib.: དེ་ཁོ་ན་ཉིད་བསྡུས་པའི་དཀའ་འགྲེལ)—Explanation of difficulties in the Tattvasaṁgraha (latter half).

The work, which is a continuation of No. 2, extends over folios 1–385 of the Tangyur m̱do, ye, and was composed by teacher Kamala-śrīla It was translated into Tibetan by the Indian sage Devendrabhadra and the Tibetan interpreter Śākya-Gelong Grags-ẖbyor-śes-rab.

4. Tattvāvatāra-vṛtti (Tib.: དེ་ཁོ་ན་ལ་འཇུག་པའི་འགྲེལ་པ)—A comentary on the Tattvāvatāra.

The work, which extends over folios 41*a*–45*b* of the Tangyur, m̱do, ha, was composed by teacher S'ri-Gupta (Tib.: དཔལ་སྦས). It begins with a salutation to Buddha thus:—

"Who for the sake of the Paramārtha (the highest truth) taught that the entire world was without self-existence, to that Omniscient One bowing down I explain the Tattvāvatāra."[1]

The Tattvasaṁgraha herein noticed No 1, is quite different from the Tattvasamāsa or rather Tattvasamāsa-vṛtti, a copy of which bearing No. 2528 is included in the Government Collection of MSS. in the Asiatic Society of Bengal. The Tattvasamāsa begins thus:—

पञ्चविंशति तत्त्वेषु जन्मना आगमागतान् ।
आविरभून् नमस्तस्मै कपिलाय महर्षये ॥ १ ॥

དེ་ཉིད་བསྡུས་པ་འདི་ཡི་དཀའ་འགྲེལ་ཆེས་རབ་གསལ་བ་རབ་དུ་
བརྩོམ་པར་བྱའོ །།

(Tangyur, M̱do, Ḻe, folio 146*a*).

[1] གང་གི་དམ་པའི་དོན་དུ་ན །།
འགྲོ་ཀུན་རང་བཞིན་མེད་གསུངས་པ །།
ཀུན་མཁྱེན་དེ་ལ་ཕྱག་འཚལ་ལོ །།

(Tangyur, M̱do, Ḻe, folio 45).

अथातस्तत्त्वसमासाख्यं सांख्यसूत्राणि व्याख्यास्यामः । इति कश्चिद् ब्राह्मणः त्रिविधेन दुःखेन अभिभूतः सांख्याचार्यं कपिलमहर्षिं शरणमुपागतः । स्वकुलनामगोत्रं स्वाध्यायार्थं निवेद्याह भगवन् किमिह परं किं याथातथ्यं किं कृत्वा कृतकृत्यः स्यामिति कपिल उवाच कथयिष्यामि अष्टौ प्रकृतयः षोडश विकाराः पुरुषः वैगुण्यं संचरः प्रतिसंचरः अध्यात्मं अधिभूतं अधिदैवतं पञ्चाभिबुद्धयः पञ्चकर्म्म योनयः ... ... ।

The work consists of nine folios and ends thus :—

एवं महर्षेर्विज्ञानं कपिलस्य महात्मनः ।
अनुष्टुप् छन्दसा चात्र ज्ञेयं श्लोकशतत्रयम् ॥
इति तत्त्व सांख्यसूत्रवृत्तिः समाप्ता ।

The Tattvasamāsa is not at all an authoritative work, as it is not mentioned by Mādhavācārya (14th century A.D.). The work seems to have been compiled by Vijñāna-bhikṣu, two or three hundred years ago, from the kārikās of Īśvara-kṛṣṇa.

Dr. G. Bühler, during his explorations of the Bṛhat Jñāna Koṣa in the temple of Parśvanātha at Jesalmir, found in 1873 a *Pothi*, consisting of 189 ancient palm-leaves showing the characters of the 12th or 13th century and bearing on the outside corner the title *Kamala-śīla-tarka.*[1] Its real name, according to Dr. Bühler, is, however, *Tarka-saṁgraha* by *Kamala-śīla*, and it contains a full exposition of the various philosophical systems of India.

The *Tarka-saṁgraha* referred to by Dr. Bühler is perfectly identical with the *Tattva-saṁgraha* noticed in this paper. The *Maṅgala* or the introductory part in the former work, as noted by Dr. Bühler, runs as follows :—

प्रकृतीशोभयात्मादि [क्रियया] रहितं चलम् ।
कर्म्मतत्फलसम्बन्ध व्यवस्थादि समाश्रयम् ॥
गुण द्रव्य क्रिया जाति समवायाद्युपादिभिः ।
शून्यमारोपिताकार शब्दप्रत्यय गोचरम् ॥
स्पष्टलक्षणसंयुक्त प्रमा द्वितयनिश्चितम् ।
अणीयसापि नांशेन मिश्रीभूतापरात्मकम् ॥

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[1] *Vide* G. Bühler's correspondence with Rai Sarat Chandra Das, Bahadur, C.I.E., Hony. Secy. to the Buddhist Text Society, published in the Journal of the Buddhist Text Society, Calcutta, Vol. I, Part II, p. x.

असंक्रान्तिमनाद्यन्तं प्रतिविम्बादिसंनिभम् ।
सर्व्वं प्रपञ्चसन्दोह निर्मुक्तमगतं परैः ॥
स्वतन्त्र श्रुतिनिःसङ्गो जगद्धित विधित्सया ।
अनल्पकल्पासंख्येय सात्मीभूत महादयः ॥
यः प्रतीत्य समुत्पादं जगाद वदतां वरः ।
तं सर्व्वज्ञं प्रणम्यायं क्रियते तर्कसंग्रहः ॥

The introductory part in the Tattva-saṁgraha is identical with the above as is evident from the Tibetan version extracted below :—

རང་བཞིན་དབང་ལྡན་གཉིས་ཀ་དང་།།
བདག་སོགས་བྱེད་དང་བྲལ་གཡོ་བ།།
ལས་དང་དེ་འབྲས་འབྲེལ་བ་དག།།
རྣམ་པར་བཞག་ལ་སོགས་པའི་རྟེན།།
ཡོན་ཏན་རྫས་དང་བྱ་བ་དང་།།
རིགས་དང་འདུ་སོགས་ཁྱད་པར་གྱིས།།
སྟོང་དང་སྒྲོ་བཏགས་རྣམ་ཅན་ནི།།
སྒྲ་དང་ཤེས་པའི་སྤྱོད་ཡུལ་ཅན།།
མཚན་ཉིད་གསལ་དང་ལྡན་པ་ཡི།།
ཚད་མ་གཉིས་ཀྱིས་གཏན་ལ་དབབ།།
ཆ་ཤས་ཤིན་ཏུ་ཕྲ་བས་ཀྱང་།།
འདྲེས་པ་གཞན་གྱི་བདག་ཉིད་མིན།།
མི་འཕྲོ་ཐོག་མཐའ་མེད་པ་ཅན།།
གཟུགས་བརྙན་ལ་སོགས་དག་དང་འདྲ།།

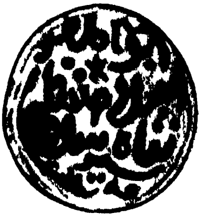
སྤྲོས་པ་ཀུན་གྱི་ཚོགས་དང་བྲལ།།
གཞན་གི་རྟོགས་པ་མཛད་བཞེད་པ།།
བསྐལ་པ་གྲངས་མེད་མི་ཉུང་བས།།
གུས་རྗེ་ཆེན་པོའི་བདག་གྱུར་པ།།
རྟེན་ཅིང་འབྲེལ་བར་འབྱུང་བ་ནི།།
གང་གིས་གསུངས་པ་སྨྲ་བའི་མཆོག།།
ཀུན་མཁྱེན་དེ་ལ་ཕྱག་འཚལ་ནས།།
དེ་ཉིད་རྣམས་ནི་བསྡུ་བར་བྱ།།

The Tattva-saṁgraha noticed by me was written by S̈ānta-rakṣita, whereas the Tarka-saṁgraha noticed by Dr. Bühler was written by Kamalaśīla. But the Tattva-saṁgraha-pañjikā, or the explanation of difficulties in the Tattva-saṁgraha, noticed in No. 2 of my article, was the work of Kamala-śīla. This shows that Dr. Bühler's Tarka saṁgraha was the commentary (with or without text) on the Tattva-saṁgraha. As a fact Kamala-śīla was the foremost pupil of S̈ānta-rakṣita and wrote a commentary on his preceptor's work. They lived in the 8th century A.D. S̈anta-rakṣita was the first Indian abbot in the first monastery in Tibet, named Sam-ye, about 749 A.D. At the invitation of the king of Tibet, Kamala-śīla, too, visited the country and defeated in a metaphysical controversy the Chinese missionary Hoshang. (B.T.S. Journal. Vol. I, Part I).

66. Proposed Correction with regard to the Reading of an Inscription on some of the Suri Dynasty Coins.

By Colonel C. E. Shephard.

Since writing, on the above subject, the article published in the Journal of the Asiatic Society, Bengal (New Series), Vol. II, No. 9, 1906, a coin No. 8787 of the (old) Catalogue of the Indian Museum, Calcutta, of Islām Shah Suri from the Malot mint, has been brought to notice by the kind courtesy of Mr. H. Nelson Wright. Casts of the coin are sent herewith. This coin puts the correctness of the reading as الديّان beyond doubt.



A point, however, that is open to controversy is whether the ديّان is to be interpreted as referring to these Sultans themselves, and so to be translated as "a just ruler," or whether it should be taken as part of the preceding phrase and the whole sentence read as—

الحامي الدين الديّان

and translated "the protector of the religion of God"; as mentioned in the former article. ديان is used as an epithet of God.

The phrase seems capable of either translation, but in favour of the latter interpretation, notice may be drawn to some coins of Sher Shah's No. 356 of Thomas' Chronicles, and No. 567 of the British Museum Catalogue where coins having an inscription running في عهد الامير الحامي in the centre are read as having in the margin the words السلطان العادل الدنان (*sic*) الدين in No. 567, and السلطان العادل فريد الدين و الدنيا in Thomas' No. 356; and this number is quoted under No. 567 of the British Museum Catalogue.

These marginal readings vary considerably, but the point with reference to the present article is that they both agree in reading السلطان العادل; and it may be inferred that the Sultan would not twice in one short inscription refer to his justice, and that therefore the الديّان, which should have been read instead of الدنان in the inscriptions on No. 567, refers to "the requiter of good and evil," hence "God."

The reading as given in the British Museum Catalogue No. 567 is more probably correct; the words are all much of a size and would fit into the marginal spaces if carefully cut. It is impossible to trace Thomas' reading in the illustration he gives to the coin he quotes. His illustration, Pl. V, 185, has three faulty margins, but he may have deduced his reading by comparison with other coins.

After examining a large number of coins in the British Museum, and comparing also those published in Dr. Hœrnle's paper in J.A.S.B., Vol. LIX, the reading الحامي الدين seems the usually adopted one. This point is noted because on the coins of Muḥammad S͟hah Bahmani, pictured in Thomas' Chronicles, No. 303, p. 342, where the inscription uses both the words الحامي and الديّان, the laqab is given as ناصر لدين, the whole inscription running الناصر لدين الديان الحامي لاهل الايمان; and this use of لدين and not الدين is confirmed by comparison with five of the same Sultan's coins in the British Museum collection.

In Plate III, 13, accompanying Dr. Hœrnle's paper above alluded to, the reading الحامي لدين seems clearly given, but it is the only clear case of this reading.

The meanings of ناصر and حامي are so synonymous that this instance of the expression ناصر لدين is quoted.

67. Narnaul and its Buildings.

By G. Yazdani, M.A.

As a field of archæological exploration Narnaul cannot complain of entire neglect. It was visited in 1883 by Mr. Garrick, and its architectural remains were examined and reported on by him. I have availed myself of the opportunity afforded to me during a short sojourn here to add my humble quota of information to the already accessible stock on the subject.

Topography and General aspects.

Narnaul lies to the south-west of Delhi at a distance of 48 *cos* or about 84 miles. It is situated in 28° 2′ N. latitude and 77° 4′ E. longitude, and now contains a population of 21,159. In the time of the Mughal Emperors it was a town in the province of *Mewaṛ*, but since the mutiny of 1857 it has been made over to the Patiala State. The climate is bad, and unwholesome. It becomes intolerably hot during summer and equally cold in winter. The soil is unproductive, and when cultivated yields but meagre crops.

Narnaul has always been celebrated for its *mehndi*. This is a vegetable dye, which the Indian women are fond of using to redden the palms and fingers of their hands. There are no mineral productions of any sort in the place, nor any natural phenomena to attract one's attention.

Nomenclature.

The etymology of this name is still a *vexata quæstio*. Mr. Garrick explains it in three ways[1] :—

(1) Its name was *Náhar Naul*, "the forest of tigers," because numerous tigers were to be found there.

(2) Its name was *Nár Naul*, *nár* meaning 'woman' in the local *patois*, and *naul*, 'beautiful,' because it is said that it contained beautiful women.

(3) Its name was *Nág Naul*, *i.e.*, when the city was founded a mongoose was seen fighting with a serpent, hence the name from *Nága* a 'snake' and *newal* a 'mongoose.'

In addition to the above there are some more theories, but they are all equally absurd and have no historical basis. My surmise is that the present name Narnaul is a shortened form of the original name, which was most probably derived from Naravāhaṇa, the name of the founder, and *aval*, a popular suffix meaning 'range' or 'series,' such as at the end of Chandraval, Bhusaval, etc. My guess is based upon a tradition which says that Narnaul is the historical name of the place. By the mode of computation called *abjad*, the word gives the number 337 which, representing the *hijra* year, is equivalent to 949 A.D. This date is almost contemporary with the time of the Guhila prince Naravāhana of Mewar.[1]

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[1] See Archæological Survey Report, Vol. XXIII, p. 27.

History.

The early history of Narnaul is involved in utter obscurity. From the annals of the place little information can be gleaned about the time before her chiefs became intimately connected with the Mughal dynasty. Mr. Garrick says: "The city of Narnaul was at first founded under the Dhosīhils and was ruled by the *Jogis*, or devotees, who enjoyed a high reputation for their spiritual attainments."[2] There are many other similar traditions to connect Narnaul with old Hindu dynasties: the best evidence for its antiquity is the characteristic style of its ruins. The authentic history of Narnaul begins with the year 531 A.H. = 1137 A.D., when Shah Wilayat, a saint of considerable fame, came to this place, and after fighting some battles with the princes of the place died a martyr there.[3] In the reign of Akbar Narnaul was a flourishing town and Nawab Shah Quli Khan Baharlu held the governorship of the place for over fifty years.[4] At this time many stately edifices were erected and gardens were laid out here. A tradition says that the tomb of Shah Nizam was built at the instance of Akbar, though the fact is not corroborated by any history of the time. However, it is quite true that the grand mosque in connection with this *dargah* is a work of Jahangir

Shah Jahan bestowed the *Nizamat* of the town upon Rae Mukand Das.[5] He was an ostentatious governor who had displayed his love of splendour in his buildings. The ruins of a building named *chhatta*, probably his dwelling-house, and of a *serai*, in which the court of the Nizamat of the Maharaja of Patiala is now held, are still shown to travellers. In the reign of Muhammad Shah, A.H. 1133 = A D 1721, Narnaul was taken and plundered by a Rajput prince named Ajit Singh.[6] The Mahrattas also had possession of it for some time. But when after the battle of Panipat, in A.H. 1174 = 1764 A.D.,[7] the Marhatta power waned, Narnaul was recovered by the Mughals. They ultimately bestowed it upon the Nawab of Jhajjar, in recognition of the services which the latter had rendered on various occasions to the royal throne The last of these Nawabs, a bastard, named Abdu-r-Rahman, rebelled against the British Government at the time of the mutiny (1857), and was consequently hanged. When the mutiny was over, the Government gave Narnaul to the Maharaja of Patiala, in recognition of the loyalty and faithfulness which the Maharaja had exhibited during the crisis. Since then it has remained in the possession of the Chiefs of the Patiala State, and they have always held it with great pride and honour.

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[1] *Vide* Duff's Chronology of India, p. 28[illegible]

[2] *Vide* Archæological Survey Report. Vo[illegible] XXIII, p. 27.

[3] See inscription over the south doorway of the tomb of Shah Wilayat, Narnaul

[4] *Vide* Archæological Survey Report. Vol XXIII, p. 28.

[5] *Vide* Ma'asir-ul-Umara, Asiatic Society of Bengal edition, Vol. II, p. 237 238

[6] *Vide* Elphinstone's History of India, p 616—617.

[7] See Elphinstone's History of India, p. 667—669.

Buildings.

Narnaul is strewn with many buildings and a majority of them are tumbling down and fast decaying. The most important of them are the following:—

(1) *Chhatta Mukand Das.*

Rae Mukand Das, as I have said above, was the *Diwan* of Narnaul during the reign of S͟hah Jahan. The author of Ma'asir-ul-Umara[1] says that Rae Mukand was at the beginning of his career an ordinary servant of Asif Jah, but being a man of good sense and courage as well as integrity, he rose in time to be the governor of Narnaul. He was very generous and his *raiyats* were always much pleased with him.

Chhatta in *Urdu* means a hive, and we find that many buildings cluster round this house. Mr. Garrick calls it *Chattar*, but gives no reason for his styling it so.[2] The building is not at all in the style that was prevalent at the time there. It is much like a building of Akbar's time. The outlines are Muhammadan, but the details are purely Hindu. It is lying quite neglected and is in a very dilapidated condition. Many roofs have tumbled down. When I was there, a suggestion was made by the Chief Engineer of the Patiala State, that the local school be shifted to this building and the repairs be made out of the Public Fund. This was, indeed, an excellent proposal, but I do not know how far it has been carried out.

At a small distance from the *Chhatta* there is Rae Mukand Das's Serai. It has an inscription which I have read as follows:—

Text.

در دور ابوالمظفر شهاب الدين محمد صاحب قران ثاني شاهجهان بادشاه
غازي راے رايان راے مكند داس ملازم نواب آصف جاهي بعمارت بلند
كاروانسراے امر فرمود - بعهد و اهتمام مهتا (پور ؟) مل و هرداس ترتيب يافته
سنه .. . ۰—۱۱ هجري -

Translation.

" During the reign of the victorious father Shahabu-d-din Muhammad, the second lord of the happy conjunction, Shah Jahan, the victorious king; the Rae of Raes, Rae Mukund Das gave orders to build this magnificent *carvanserai.* It was completed under the superintendence of Mehtapur Mal (?) and Har Das in A.H. 11 ……

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[1] *Vide* Ma'asir-ul-Umara, Asiatic Society of Bengal edition, Vol. II, pp. 237—238.

[2] *Vide* Archæological Survey Report, Vol. XXIII, p. 28.

(2) *The tomb of Ibrahim Shah.*[1]

Mr. Garrick[2] has made two regretable mistakes in connection with this building, and I am at a loss to understand what led him to do so. First, he calls the building to be the tomb of Sher Shah's great-grandfather, Hasan Shah. Second, he says that it was built by one Sher Shah, resident of a village called Simla, now belonging to the Raja of Khetri, and not by Sher Shah, the king. The inscription in Persian over the east doorway states in plain words that it was erected by Farid (Sher Shah, the king), the son of Hasan Sur and grandson of Ibrahim, over the grave of his grandfather.

The tomb is a very fine specimen of the *later* Pathan style and is characterized by its massive outlines and exquisite details. It is situated on an elevated terrace and looks so grand, and at the same time so picturesque that it quite justifies the eulogium more than once passed on the works of these Pathans, "They designed like Titans and finished like jewellers." The building is of considerable dimensions. Its base is a perfect square, measuring 34′ 6″ between the walls which are 11′ in thickness. The interior is surmounted by a dome 48′ in diameter, and there is a gradual transition from the square base to the circular plan of the dome through successive octagonal and sixteen-sided figures. Octagonal kiosks supported by pillars richly carved cluster round the drum of the dome. The building has three doorways, the one facing the east is open and the other two towards north and south are closed by *jali* screens. The west wall has no opening, but on the outside is a blind doorway similar to others. The dome is not pierced by any windows, but considerable light is let in through the windows. The sarcophagus is of beautiful marble and in its details bears striking resemblance to that of 'Isa K͟han's tomb at Delhi. A little piece of blue tile work inside the dome shows that originally there was a regular band of that sort of work for the decoration of the hall. The building is in an excellent state of preservation and needs little repairs.

The tomb has some inscriptions which read as follows :—

Over the east doorway —

Text.

(1) عمارت [illegible] کردار کسے از تو پرسد
جوابش بده گر تو دانائے رازي

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[1] For some of my remarks on this building, I am indebted to Mr. W. H. Nicholls, Archæological Surveyor, U.P. and Panjab, in whose company I visited the place.

[2] *Vide* Archæological Survey Reports, Vol. XXIII, p. 28.

(2) بنا کرد این گنبد عرش پایه
شه مملکت شیر سلطان غازي
(3) سر سروران مالک هفت کشور
که تیغش ز برق جهان برد بازي
(4) فرید حسن سور ابن براهیم
بفرمود بر قبر جد خلد سازي
(5) چو پرسي ز من کار فرما که بودش
ابابکر بن شیخ احمد نیازی
(6) نیازی به تعمیم و تخصیص کندي
بدین ذات پاکش بود سرفرازی

Translation.

(1) If any one inquire of you who built this edifice, then tell him if you know the secret.

(2) The emperor of the kingdom, Sher Sultan Ghazi, has built this heaven-like dome.

(3) The king of kings, master of the seven empires, whose sword has surpassed the lightning of world.

(4) Farid Hasan Sur, son of Brahim (Ibrahim), gave orders for building a paradise over the tomb of his grandfather.

(5) If you inquire of me who was the superintendent, then I will say Abu Bakr, son of Shaikh Ahmad Niyazi.

(6) His clan was Niyazi and his tribe was Kindi, and on account of his pure descent he was honoured.

Over the north doorway :—

Text.

(1) خدا دارد این گنبد اکبر را
چو عرش علا سایه افگند بر ما
(2) ابابکر کندي بن شیخ احمد
بود بود بهر بنا کار فرما

Translation.

(1) May God ever keep this big dome, which has thrown its shade over us like high heaven.

(2) Abu Bakr Kindi, son of Shaikh Ahmad, was in charge of this building when it was being erected.

Over the south doorway :—

Text.

(1) چنین گنبدے بوالعجب شاہ عالم
عمارت بفرمود بر تربت جد
(2) گر از کار فرما بپرسند نامے
ابابکر کندست بن شیخ احمد

Translation.

(1) Such a wonderful dome the king of the world erected over the tomb of his grandfather.

(2) If people inquire of you about the name of the superintendent, then say Abu Bikr Kindi, son of Shaikh Ahmad.

(*To be continued.*)

68. NUMISMATIC SUPPLEMENT No. VIII.

***Note.*—The numeration of the article below is continued from p. 65 of the "Journal and Proceedings" for 1907.**

III. PAṬHĀN AND BENGAL COINS.

55. A find of 85 silver coins in the Moorshidabad District contains a number of rare specimens and some novelties. Of the total number 57 coins were in such poor condition that they were returned by Mr. Nelson Wright as useless. The remaining coins may be classified as follows: -

PAṬHĀNS.

S̲h̲ams-ud-dīn Altams̲h̲.—Two coins, like Thomas No. XXVIII, p. 46.

Rukn-ud-dīn Fīroz.—One coin, as published by Mr. Nelson Wright at p. 772, Journal, Royal Asiatic Society, 1900. The mint (Haẓrat Dihlī) is clear, but not the date.

Raẓia.—One coin, like Thomas No. 90.

Muizz-ud-dīn Bahrām.—Two coins. One is the same as Thomas No. 92. The other differs in the reverse inscription which is in a circle, instead of a square, and reads :—

السلطان الاعظم
معز الدنيا و الدين ابو
المظفر بهرامشاه ابن
السلطان ناصر امير المو
منين — Plate vi, 1.

The margins are unfortunately illegible.

Naṣir-ud-dīn Maḥmūd.—One coin, like Thomas No. 106.

RULERS OF BENGAL.

Rukn-ud-dīn Kai Kāūs.—Eight coins like Thomas No. 125. One is dated in 697 A.H., apparently a new date for coins, though known from inscriptions. (See Blochmann, J.A.S.B., 1873, pp. 247-9).

S̲h̲ihāb-ud-dīn Bug̲h̲da.—Eleven coins, like Thomas No. 168. The mint Lakhnautī is legible on one.

G̲h̲iyāṣ-ud-dīn Bahādur.—One coin, like Thomas No. 186 (said to be unique) in perfect condition, with mint Sunārgāṅw, and date 728.

'Alā-ud-dīn 'Alī.—New type.

Obverse.	*Reverse.*
In square of double lines.	In square of double lines, enclosed in circle.
السلطان الاعظم	الامام
علا الدنيا و الدين	المستعصم امير
سكندر الزّمان ابوالمظفر	المومنين
عليشاه السلطان	Margin ? . عمر البلده فيروزه . .
Margin illegible.	Plate vi,. 2.

BENGAL.

A small error seems to have occurred in reading the coins of S͟hams-ud-dīn Ilyās S͟hāh of Bengal. The first line of the reverse has been read in the British Museum Catalogue of Muhammadan States (p. 15) as السلطان العادل, and this reading is repeated in the Indian Museum Catalogue, Sultans of Delhi, p. 140 (obverse). Mr. Thomas (J.A.S.B., 1867, p. 57) read السلطان الغازي on coins of the Fīrozābād mint, and this reading is borne out by a number of coins recently found in the 24-Parganas. It should, however, be noted that Mr. Thomas gave العادل on coins of Sunargāon.

The same find contained the coin described below, which is of the greatest interest, as being the first half-rupee known of the Bengal Kings.

Obverse.	*Reverse.*
	In circle
شاه سكندر	السّل
ابن الياس	طان
شاه	Margins illegible.
	Æ. ·85″. 81 grains. Plate vi, 3.

R. BURN.

56. FOUR RARE MUG͟HAL RUPEES.

In June last one of the money-changers who have occasionally supplied me coins, brought to my house a friend of his from the village of Sarkhej, some six miles from Aḥmadābād. This man, telling me he had some coins for sale, forthwith divested himself of a very shabby-looking bundle, from which he poured forth on the table before me some 120 rupees, all of them in fairly good condition, though in all, without exception, the silver had become so tarnished as to appear of a dingy black colour.

From this single heap it was my good fortune to secure, along with other very welcome additions to my collection, four coins of extreme rarity. So far as I am aware, not one of the four has hitherto been published, and accordingly it gives me pleasure to communicate the following note regarding them.

1. *A Rupee of A'ẓam Shāh; Mint, Aḥmadnagar.*
Date, 1118—احد.
Weight, 175 grains.
Diameter, 1 inch

Obverse.

ممالک اعظم شاہ
١١١٨
شـــــــاہ
بدولت و جاہ پاد
سـکہ
زد در جہان

Reverse

احمد نگر
ضـــــرب
جلوس
و ـــــــــ
اشر سنہ احد   Plate vi, 4

A few years ago, my friend Mr. Nelson Wright showed me a beautiful rupee in his possession of this same reign and mint, and, if I remember right, of the same date. Till now that coin has been held to be unique. The A'ẓam Shāh muhr, No. 848 of the British Museum Catalogue, bears no mint-name. Agreeing, as it does, so closely with the rupee here described, it may, I fancy, be safely assigned to the Aḥmadnagar Mint.

2 *A Rupee of Kām Bakhsh; Mint, Gokalgarh (?).*
Date, Hijrī year wanting; regnal year احد.
Weight, 176 grains.
Diameter, ·9 inch.

Obverse

دین پناہ
پاد کام بخش
شـــــــاہ
بر خورشید و ماہ
سکـــــــہ
در دکن زد

Reverse.

مانوس

سنة احد جلوس
ضـــرب
گوکلگڈه Plate vi, 5.

This coin issued from a mint of Kām Bakhsh otherwise unknown: but some uncertainty attaches to the mint-name, as unfortunately in this specimen only the upper portions of its letters are present on the Reverse. If Gokalgarh, it cannot, of course, be the Gokal near Muttra. It may, however, with some probability be identified with the fort, گڈه, named Gokalpūr in the province of Bījāpūr. See No. 48 in the List of Forts given on page 164 of Sarkar's "India of Aurangzib."

3. *A Rupee of Shāh 'Ālam I; Mint, Gūtī.*
Date, Hijrī year wanting: regnal year 2.
Weight, 177 grains.
Diameter, ·9 inch.

Obverse

غازي
شـــاه
عالم پاد
شـــاه
سکه مبارک

Reverse.

مانوس
میمنـــت
۲
سنة جلوس
ضـــرب
گوتي Plate vi, 6.

The only coins hitherto known from the Gūtī mint are the tiny gold piece of Farrukh-siyar (No. 901 of the British Museum Catalogue), and a rupee of Aurangzeb described by Mr. Longworth Dames in his article "Some coins of the Mughal Emperors," published in the Numismatic Chronicle, Fourth Series, Vol. II. The specimen now to hand supplies proof that the same mint was in operation in the reign of Shāh 'Ālam I.

4. *A Rupee of Farrukh-siyar; Mint, Karārābād.*
Date, Hijrī year wanting; regnal year 2.
Weight, 175 grains.
Diameter, 1 inch.

Obverse.

١ بحر و بر فرخ سیر
شـــــــــــاه
حق بر سیم و زر پاد
فضـــــــل
سکه زد از

Reverse.

مانوس
میمنـــت
سنه ۲ جلوس
ضـ - رب
کرارباد

Plate vi, 7.

In the Numismatic Supplement, No. IV (page 15), Mr. Nelson Wright in describing Mr. Framji Jamaspji Thanawala's rupee, struck by Jahāndār at Karārābād, states, "This is quite a new "Mughal mint, and its locality is still unsettled. It must probably "be sought for in the Dakhan." Mystery still enshrouds the locality; but from the specimen now to hand we learn that the mint was active not only during the few months that Jahandār occupied the throne, but also during, at least, the early years of the reign of the Emperor Farrukh-siyar.

GEO P. TAYLOR.

Ahmadābād: 8th August, 1906.

57. A find of coins at Mahadpur in the Betul District, Central Provinces, has yielded some novelties in Mughal rupees. The coins covered the reigns of Shāh-Jahān, Aurangzeb, Jahāndār, Farrukh-siyar, Shāh Jahān II, Muhammad Shāh, and Shāh 'Ālam II. Most are in poor condition, and many are shroff-marked.

(*a*) *Muhammad Shāh, Mint, Ujain.*

Obverse	*Reverse*
	مانوس
+ + ۱۱ محمد شاه	میمنـــت
ــــــــے	۲۰
بادشاه غاز	سنه جلوس
ــــــــک	ضـــرب
سکه مبار	دار الفتح اجین

AR. 174. ·9". Plate vi, 8

(b) *Muḥammad S͟hāh, Mint, Elichpur.*

Obverse. As on (*a*).

Reverse.

مانوس
میمــنت
سنه + جلوس
ایلچپور

The regnal date is obliterated by a shroff-mark.

Æ. 175. ·9″. Plate vi, 9.

(c) *Muḥammad S͟hāh, Mint, K͟hujista Bunyād.*

Obverse. As on (*a*).

Reverse.

مانوس
میمــنت
سنه + جلوس
ضـــرب
خجسته بنیاد

Disfigured by many shroff-marks.

Æ. 165. 1″ Plate vi, 10

(d) *Muḥammad S͟hāh, Mint, Machhlīpatan.*

Obverse. As on (*a*) but date 1157.

Reverse.

جلوس
میمـــنت
۲۷
مانوس سنه ... مچهلی
پٹن

Æ. 165. ·9″. Plate vi, 11.

(e) *Muḥammad S͟hāh, Mint, Lakhnau.*

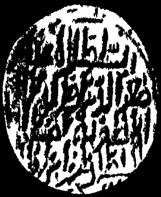
Obverse. As on (*a*) but date (11) 34.

Reverse.

مانوس
میمـــنت
۴
سنه جلوس
ضرب
لکهنو

Æ. 171. ·9″. Plate vi, 12.

R. BURN.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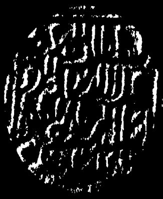
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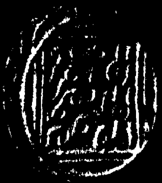
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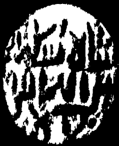
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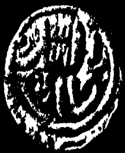
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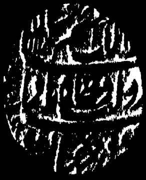
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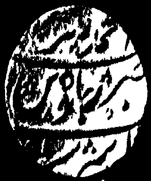
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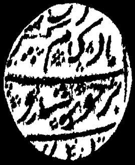
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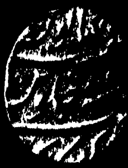
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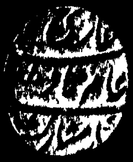
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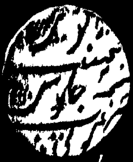
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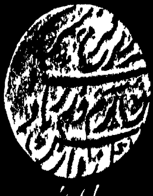
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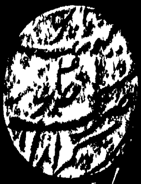
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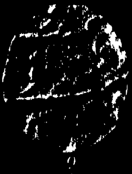
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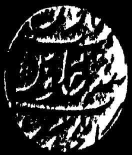
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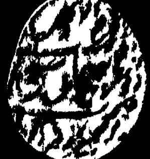
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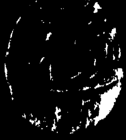
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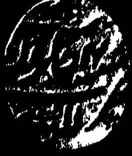

12

69. A case of Lateral Floral Prolification of the Inflorescence of the Pine-apple—*Ananas sativus*, Schult.

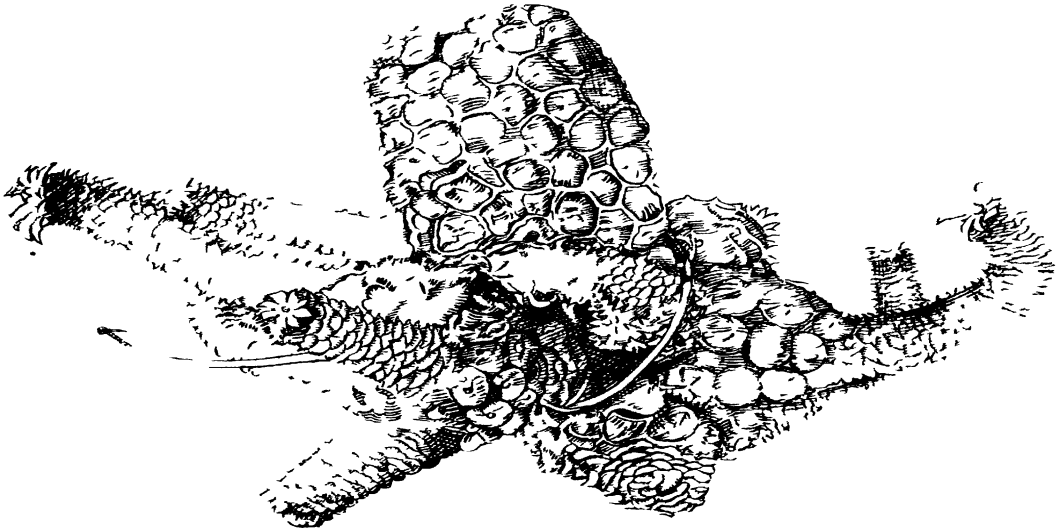
By A. T. Gage.

In July 1907 Mr. P. C. Coomar of Calcutta sent to me from his garden at Chanditolla, Hooghly, the curious-looking pine-apple infructescence described below, which appears to be worth placing on record as an example of lateral floral prolification.

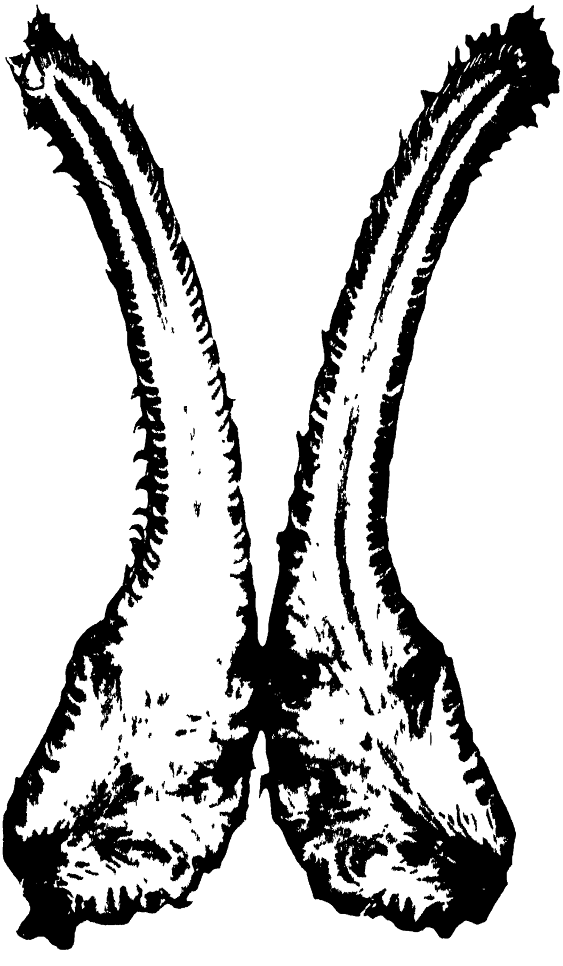
The infructescence consisted of a central 'strobile' of normal shape and about 14 cm. long by 8 5 cm. in transverse diameter, the base of which was surrounded by the curiously shaped smaller infructescences (Plate VIII).

Each of the latter consisted of a basilar strobile-like swelling—about 4·5–6 cm in transverse diameter, and 6–7 cm. long—above which the infructescence was produced into a curved prolongation of its axis about 13-15 cm. long by about 2 cm. in diameter, and closely covered with brownish imbricating scales that toward the tip of the infructescence assumed a leaf-like appearance and colour. A longitudinal section through one of the lateral infructescences is shown in Plate IX. The central strobile and its lateral offshoots together give quite a "Hen and Chickens" effect. A longitudinal section through both central and lateral infructescences (Plate X) shows fairly clearly the organic connection of the latter with the main axis, and also that the lateral infructescences are carried in the axils of the basilar bracts of the central one.

Lateral *floral*—as apart from *foliar*—prolification of the inflorescence is stated by Masters in his Vegetable Teratology to be the commonest of all the deviations from the normal as far as the inflorescence is concerned He gives a list of orders and genera in which the phenomenon has been most frequently observed, but, as naturally most of the observations recorded have been made by botanists residing in the cool temperate regions of the globe, it is not surprising that Bromeliaceæ are absent from the list. Nor have I seen any reference to a case of the abnormality in the pine-apple, in such literature of Teratology as I have been able to consult; so that a description of the present case seems justified.



ABNORMAL PINEAPPLE



70. An Old Christian Cemetery in Haidarabad.

By Major T. W. Haig.

The following epitaphs, the dates of which range from 1645 to 1807, are from the old Armenian graveyard at Haidarābād. One epitaph, as will be seen, is in Dutch. Dr. Daniel Havart in his work *Op en Ondergangh van Koromandel*, informs us that the English and Dutch merchants in Haidarābād originally had but one cemetery between them, an hour's journey distant from the Dutch factory, which stood near the *Čār Minār*. It is not easy to verify this statement, for no English graves of the seventeenth and eighteenth centuries are known to exist in or near Haidarābād, and from the fact that Stephen Visser's tomb is found in an Armenian cemetery it appears that the Dutch shared with the Armenians a cemetery which is still, as it was described by Havart, an open field. From the same authority we learn that Johannes van Nijendaal, chief of the Dutch factory, bettered this state of affairs in 1678, when, at great cost, he surrounded the (new) Dutch cemetery with a hedge of milk-trees with a stone gate, and built a small house for the mourners. At the same time he collected the bones of all the Dutch who had been buried in the old (or Armenian) cemetery, and reinterred them in two stone tombs. The book-keeper's tombstone is particularly mentioned as being too heavy to be carried far, and for this reason his remains were left undisturbed.

In the immediate neighbourhood of the Armenian cemetery is a plot of cultivated land surrounded by milk-trees, and it appears highly probable that this is the "new" Dutch graveyard, but of the stone gate, the house for the mourners, and the tombs no trace remains. These were, perhaps, demolished after the annexation of the kingdom of Golkonda by Aurangzib in 1687, shortly after which time the Dutch factory was removed from Haidarābād.

For these references to Havart and for the reading of the Dutch epitaph I am indebted to M Maurits Wagenvoort of Amsterdam, and for the translations of the Armenian epitaphs to Mr. S. N. Pahlaw of Haidārābād.

STEVEN
ŸS BRANTS
VIS SER
BOE CHOU
DER
OBYT, 20
MAŸ A° 1662.

Stephen
Ysbrantson
Visser
Book-keeper
of the East India Co.
Died 20th May, 1662.

Աս է տ ապան ծ ուրիկ ենց Պետ րոս ին Թվ ՌՃԻԲ	This is the tomb of Peter of Zoorik. Anno 1122 (=1673 A.D.).
Այս է տապանն Կասպարի ո րդի Եավրը է գրեցաւ ի Թվին ՌՃԿ ԱՐԱՄ ԺԴ	This is the tomb of Kasbar, son of Yavre. Written in the year 1160 (=1711 A.D., 14th Arsm).
Աս է տապ ան քեռի Մ արգարի որ դէ Ծատուր ին Թվ ՌՃԻ	This is the tomb of Uncle Margar, son of Zatoor (*Deodat*) Anno 1120 (=1671 A D).
Այս է շի րիմ և ւ տապ ան դը Դեբօզ ենց առա քելին Թվն ՌՂԴ	This is the grave and tomb of Arakiel of Denboz. Anno 1094 (=1645 A.D.).
Այս է տա պան ... . ակի որդի Աղամիր ին Թվ Ռ ՃԻԱ	This is the tomb of.........son of Aghamir. Anno 1121 (= 1672 A.D.).
† Այս է տապ ան Աստապ ադցի Եսա է որդի Փլ իպոսին . որ փոխեցաւ ի քս ամէն Թվն ՌՃԽԱ	This is the tomb of Isaiah of Astabad, son of Philip; whom Christ took unto himself. Amen. Anno 1141 (= 1692 A.D.).
.... Աղաբաբի որդի Սիմեոն որ . ետ . սբ Թովմայի	...Simeon, son of Aghabab, who gave to St. Thomas..........
Այս է տապան Սքիլանենց Յակոբ Ջանի Որդի Նիկողո սին Թվն ՌՃԾԹ	This is the tomb of Jacob Jan of Skilanents, son of Nicolas. An. 1159. Armenian era (=1710 A.D.).

Աս է տապան Դիարպեքրցի խօջայ Ասլան ին թվ ՌՃԻԷ	This is the tomb of Khoja Aslan of Diarbekr (*Tigranacerta*, Armenia) An. 1127 (=1678 A.D.).
†	
Աս է Տապան խալագ ին թվին ՌՃԻԲ	This is the tomb of Khalag, Anno. 1122 (=1673 A.D.).
Աս է տապ անս տր Յ·հաննէսի որդի տր Յակոբին թվ ՌՃԻԹ	This is the tomb of the Revd. Johannes, son of the Revd. Jacob. Anno 1129 (=1680 A.D.).
Աս է տապան == ձիթա յ ծախ == ս Աւ Աթայվ ալէ == թվ ՌՁ Թ == փոխեց • առ քս	This is the tomb of oil-merchant Avo Atavale (? or Avat Aivalo). Anno. 1089 (=1640 A.D.) taken to Christ.
†	
Աս է տապան Նի աչի Սե(?) տկի որդ վարդան ին թվ ՌՃ ԻԸ	This is the tomb of Niaji Setki,[1] son of Vardan. An. 1128 (=1679 A.D.).
Աս է տապան Աբէլ Նազ արի որդի ծ·ատուրի թվ ին ՌՃ ԻԶ	This is the tomb of Abel Nazar, son of Deodat. Anno 1126 (=1677 A.D.)
Աս է տապան դար վիշէ որ դի վարթան ին թվ ՌՃԻԱ	This is the tomb of Dervish, son of Vardan. Anno 1121 (=1672 A.D.).
Աս է տապան Նը նա (?) Սոլթան ողլին Սիմոն ին թվ Ռ ՃԷ	This is the tomb of Nanna (?) Sultan's son Simon. Anno 1107 (=1658 A.D.).

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[1] The name is not quite clear.

Այս է տապան տէր Մարգարի որդի տէր Սիմոն ին Թվին ՌՃ ՀԳ

This is the tomb of the Revd. Margarius, son of the Revd. Simon. Anno 1173 (=1724 A.D.).

Ա․ է տապան ... ... , Թվ ՌՃԻԱ

This is the tomb of (*names illegible*). Anno 1121 (=1627 A.D.).

ՍՈՐ	ԱԾ
Յի̅	Քի̅

Lord	God.
Jesus	Christ.

Այս է տապանն : իմ ռանց : Մնացկան որ կոչի Մելիք իսրայէլ խանի : կողակից . դիշխուն . Հեղինին որ . հանգեաւ ի տէր օգոստոսի : իը . Թվին 1806 : Թվին հայց ՌՄԾԵ

This is the tomb of Helena, wife of Imrantz *Mnatzagan*, called Melik Israel Khan. Rested into the Lord on the 28th of August 1806. 1255 of the Armenian era.

ՍՈՐ	ԱԾ
Յի̅	Քի̅

Lord	God
Jesus	Christ.

Այս է տապանն : իմռանց : Մնացկան որ կոչի Մելիք իսրայէլ . խանի : սիրական որդի : Յովաննէս : որ հանգեաւ : ի տէր Յուն վար : իե : Թվին 1807 Թվին հայց ՌՄԾԶ

This is the tomb of John the Beloved son of Imrantz *Mnatzagan*, called Melik Israel Khan. Rested in the Lord on the 25th January 1807. Of the Armenian era 1256.

71. On Hunting Dogs, being an extract from the *Kitāb^{u} 'l-Jamharah fī 'ilm^{i} 'l-Bazyarah.*[1]

By Lieut.-Colonel D. C. Phillott, and Mr. R. F. Azoo.

Al-Ma'mūn once said to an attendant, "Go out to the desert and buy there such horses as take your fancy." He replied, "Oh Prince of the Faithful, I have no eye for horses." Said the Khalifah, "You know about dogs?" He said, "Yes." He said, "Well, look here; all the points that you look for in well-bred pedigree-dogs, you must seek their counterpart in horses."

The mark of good breeding is a claw found either near the knee or on the shank, and it is better that this should be cut off.

The colours of dogs.—The black endure cold and heat less than others, and the white are better bred if they are black-eyed. Others have said that the black *do* endure cold well, and assert that they are stronger generally, and that all black animals endure cold well and are stronger than other colours and better for sport.

Selection of pups.—If the bitch produce only one pup, it will be better than its parents; if two, the male will be better than the female; if three, one being a female resembling the mother, then that female will be the best of the three pups; if amongst the three there be only one male, it will be the best of the three. Take the pups while too young to stand on their legs and place them in a room, and then call them to you. The one that comes to you on all four legs without much stumbling, is the best of the litter.

كلاب الصيد : قال المامون لبعض اصحابه امض الى البادية فابتع منها خيلا تستجيدها .قال يا امير المؤمنين لست اخبر الخيل قال افلست تخبر الكلاب قال نعم قال فانظر كل ما تتوخاه في الكلب الفاره المنجب فالتمس مثله في الفرس وصفة النجابة مخلب يكون على راس الركبة او الساق والصواب فيه ان يقطع . ذكر معرفة الوانها فالسود منها اقل صبرا على البرد والحر والبيض افره اذا كن سود العيون . وقد قال قوم ان السود تصبر على البرد وزعموا انها اقوى وان كل السود تصبر على البرد وان كل السود من

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[1] *Vide* Jl. As. Soc. Beng., Vol. III, No. 2, 1907.

الحيوان اقوى من غيره واجرأ على الصيـــد . تخير الجراء والفراسة فيها اذا ولدت الكلبة واحدا كان افره من ابويه وان ولدت اثنين فالذكر افره من الانثى وان ولدت ثلاثة فيها انثى في شبه الام فهي افره الثلاثة فان كان في الثلاثة ذكر واحد فهو افرهها وتؤخذ الجراء وهي صغار لم تقم على قوائمها فتلقــى في مكان ثم تدعوها فايها مشى على اربع لم يكثر سقوطه فهو الافره *

72. Note on the Common Merlin (*Æsalon regulus*).

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

In the Kapurthala State this little falcon is called *Retal Turumtī* or "Sandy Turumtī,"[1] but in the Derajat and in some other parts of the Panjab *Regī*, a name in the Kapurthala State applied to the Common Kestril. In Persia it is called *Turumtā*.[2] It is a winter visitant only to the Panjab. The latest date I observed this falcon was a 26th February, at Kohat, when I observed a newly-arrived haggard on the Jarma plain. The weight of an immature male caught at Kohat on a 1st October was 5¼ oz.

In the Derajat it is caught in the following manner:—

To a wire hoop of telegraph-wire about 26 upright horse-hair nooses are attached, so that each noose slightly overlaps its fellow. Each noose, made of about eight twisted horse-hairs, when set, measures about 2½" in diameter. When the noose is pulled out straight, it measures eight inches from its slip-knot to the wire hoop. A fine invisible cord is fastened taut across the hoop so as to form a diameter, and to the centre of this diameter the live bait, sparrow or quail, is tethered by a cord four inches in length.

The horse-hair nooses are made as follows. First the horse-hairs are well washed with soap. Then, to make a single noose, eight to ten hairs are selected and a double knot is made at one end. This knot is held by the right hand, while the fingers of the left sever the hairs into two equal portions. Then by twisting the knot with the right hand and by gradually running the fingers of the left hand downwards, the hairs are twisted into a rope. This rope is then stretched, the nails of the finger and thumb being afterwards run up and down to remove any unevenness. The other end is then knotted; a loop is made for a slip-knot, and the far end is passed through the slip-knot. To fasten the noose to the hoop, the end is passed under the wire and then up, and is next bound, four or five times, round itself, being finished off with a half hitch downwards. It is then drawn tight over the wire. Before setting, the nooses should be well wetted and arranged: dry nooses do not run, or hold properly.

The merlin cannot be caught in a *bāl-chhatrī*. In a wild state, in the Panjab, it seems to prey chiefly on larks. Freeman in his *Practical Falconry* states that in England it kills mice, and also cockchafers on the wing. It is better at ringing up than the Red-headed Merlin (*Æsalon chiquera*). Its well-known pluck is not infrequently referred to in old English ballads. In one version of the "Ballad of Sir Aldingar," Queen Elinor has a prophetic 'sweven':—

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[1] *Vide* Journ. Asiatic Soc. Bengal, No. 6, Vol. III, 1907.

[2] '*Vide*' *Bāz-nāma-yi Nāṣirī.*

> "Saving there came a little gray hawk,
> A merlin him they call,
> Which until the ground did strike the grype,
> That dead he down did fall."

In the Panjab the merlin is principally flown at the Large Crested Lark (*Galerida cristata*) called *chandūl* and *chandūr* in the Derajat. I have had a series of excellent flights with a wild merlin, the lark on each occasion at last dropping from a great height and taking refuge under a clod.

Merlins are easily tamed, and should be trained as quickly as possible. They should be called to the lure, which need only be a dead bird (*kushta*), sparrow or lark, at least twice a day, and should then be given one or two bagged larks as 'trains.'[1] As larks are their natural quarry, there is, of course, no difficulty in entering to them. Merlins are delicate birds and must be kept in high condition and fed twice a day on small birds. It is not necessary to *break* them to the hood. They may be cast before being hooded, *i.e.*, held in the right hand while the hood is quietly slipped on with the left. They require to be hooded only when in the field. I have never heard of the Common Merlin being kept through the moult in India.

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[1] For a method of snaring desert larks *vide* the *Bāz-Nâma-yi Nāṣirī*

73. Indian Hawking-gloves.

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners, Calcutta.*

In the East, where falconers are usually mounted, the hawk is carried on the right-hand and not, as in the West, on the bridle-hand. In the East, too, there is usually an attendant to each hawk; consequently each leash has its glove attached to it. In Indian gloves, the third and little fingers are usually bare. In one of the *Ṭardiyāt* or poems on sport, of *Abū-Nuʼās*, the famous poet-jester of the Court of *Hārūn*^{u} *'r-Rashīd*, occur the lines:—

> I clothed my hand in a glove, well-lined with thick squirrel-fur, soft and comfortable
> That guards the fingers from the numbing cold, and from the clasp of the goshawk leaving the fist.
> It clothes the whole hand leaving only the little-finger free * * *

For peregrines and shahins, however, the glove has usually four fingers. Good, plain gloves can be bought at Amritsar and Kapurthala for as little as six annas; but, for a European, unless he has an exceptionally small hand, these gloves are too narrow. Gold-embroidered hawking-gloves are made in many parts of India, but these are only worn on full-dress occasions, or attached to the leash of a hawk sent as a present to a big person.

Figs. I, II and III are the pattern of a right-hand glove for a native hand, and, in each case, the smooth side of the leather is supposed to be uppermost. For a left-hand glove, the reverse will be the case. For a large hand, the patterns should be cut a tenth of an inch larger all round. The squares in the figures are supposed to have sides of one inch.

The glove should be made of *narī* or goat-skin, and that portion of the skin that was the back of the animal should alone be used. After the patterns have been cut out, the dotted lines *ab* Fig. I, *cd* Fig. II, and *on* Fig. III should be cut through.

First sew in Fig. II, between the first and second fingers of Fig. I, at the back. The slit portions of Fig. II are let into the sides of the two fingers Fig. I, the bottom or unslit portion of Fig. II being let into the hand of Fig. I.

Next sew together EF, Fig. I, and *mL*, Fig. III. Now join B and A, Fig. I, and sew BE to AQ, Fig. I (*i.e.*, up to Q), and also *Lk*, Fig. III, along QC, Fig. I. The line *Lk*, Fig. III, will join the line QC, Fig. I, and the two will be sewn together.

Leave from C *to* V, *Fig. I*, and *from k to* W, *Fig.* III, unsewn, for the third and little-fingers to come through. Now commence sewing from V, Fig I, and W, Fig. III, and sew all round the fingers to F, Fig. I, and *m*, Fig. III.

When the sewing is finished, the glove must be reversed so that the rough side of the leather is outermost. The stitches must be *very close* together, otherwise the points of the hawk's claws will penetrate between them.

In the under seam of the glove AC, Fig. I, at about an inch from C, a small loop of leather is inserted to which the leash may be attached.

The dotted line CDH, Fig I, shows how the pattern should be cut if a four fingered glove is required, and a similar allowance must be made in Fig. III for the extra two fingers. A second piece of leather as in Fig. II will also be required for insertion between the third and fourth fingers

Figures IV to IX represent another pattern of glove. Fig. V. is for insertion between the first and second fingers ; Fig. VI between the third and little fingers and Fig. VIII between the thumb and the first finger.

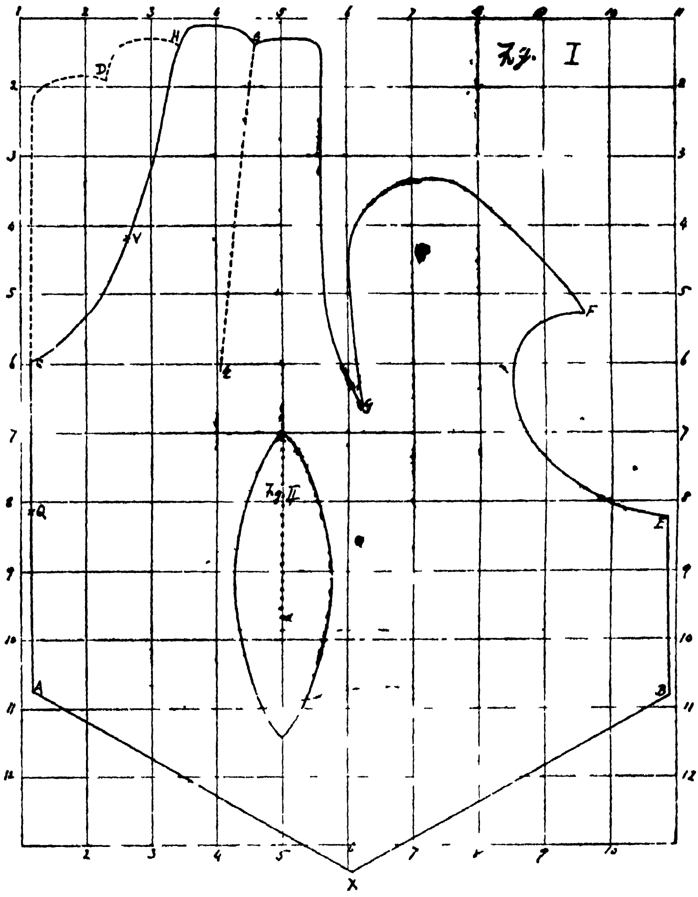
Fig. I
Fig. II
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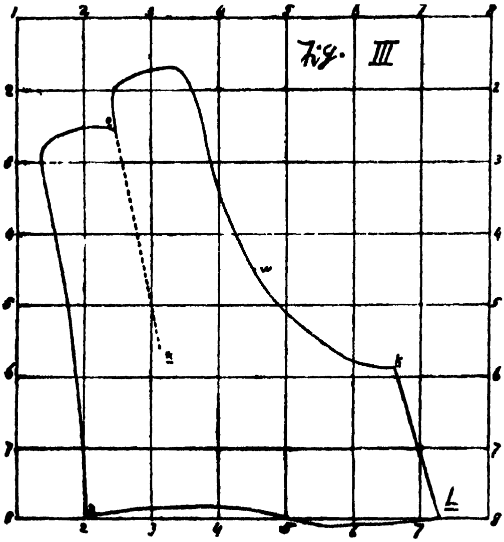

Fig. III

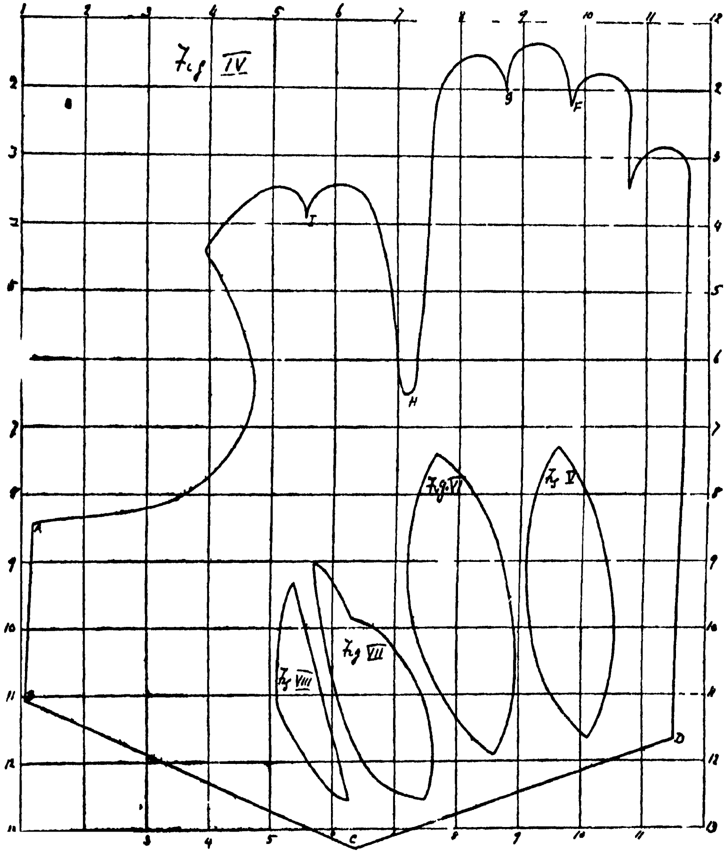
Fig IV
Fig V
Fig. VI
Fig VII
Fig VIII
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2 3 4 5 6 7 8 9 10 11 12 13

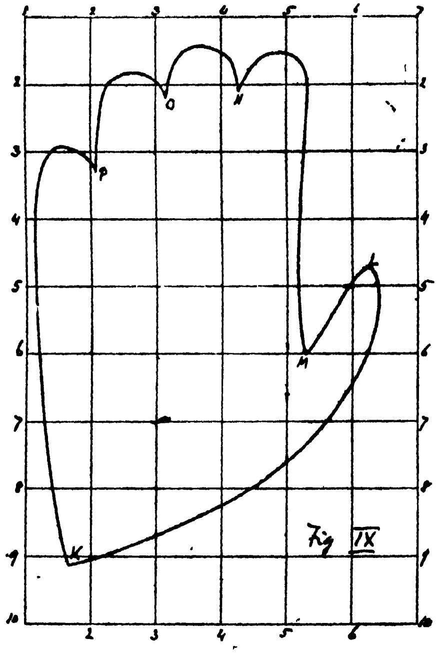
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Fig IX

74. Nyāya-praveśa, or the earliest work extant on Buddhist Logic by Dignāga.

By MAHĀMAHOPĀDHYĀYA SATIS CHANDRA VIDYĀBHŪṢAṆA, M.A.

The Nyāya-praveśa is a work on Buddhist Logic by Dignāga (ཕྱོགས་གླང་). The Sanskrit original of this work is lost. A Tibetan version of it is contained in the Tangyur, M̲do, Co (folios 183 188). The work in Tibetan is called Tshad̲-ma-rigs̲-par-h̲jug-pah̲i-s̲go (ཚད་མ་རིགས་པར་འཇུག་པའི་སྒོ་) signifying "Entrance to Logic," or rather, the "Door of Entrance to Logic." The work was translated into Tibetan by the Kaśmīrian Paṇḍita Sarvajña-śrī-rakṣita and the S'akya monk Grags̲-pa r̲gyal-m̲tshan-d̲pal-b̲zaṅ, in the great Sa-skya monastery of Western Tibet.

It opens thus [1] :—

"Demonstration and refutation together with their fallacies are for arguing against others; and perception and inference together with their fallacies are for self-understanding: so this śastra is compiled."

Demonstration or reasoning is carried on by means of a subject (also called the minor term, पक्ष or धर्मिन् ཕྱོགས or ཆོས་ཅན), a predicate (also called the major term, साध्य or धर्म བསྒྲུབ་པར་བྱ or ཆོས), reason (also called the mark or middle term, लिङ्ग or हेतु, གཏན་ཚིགས), and examples (दृष्टान्त དཔེ་བརྗོད) as follows:—

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[1] སྒྲུབ་པ་དང་ནི་སུན་འབྱིན་ཉིད།།
ལྟར་སྣང་བཅས་པ་གཞན་རྟོགས་ཕྱིར།།
མངོན་སུམ་དང་ནི་རྗེས་སུ་དཔག།།
ལྟར་སྣང་བཅས་པ་བདག་རིག་ཕྱིར།།
ཅེས་པ་བསྟན་བཅོས་བསྡུས་པའོ།།

(Nyāya-praveśa).

This *hill* (subject) is *fiery* (predicate), because it has *smoke* (reason), like a *kitchen* (a homogeneous example), unlike a *lake* (a heterogeneous example).

The reason, mark or middle term must possess three characteristics as noted below :—

(1) It must be connected with the subject, *e.g.*, smoke (reason) is connected with the hill (subject) in the above-mentioned reasoning.

(2) It must be included only in the cases which are homogeneous with the predicate, *e.g.*, the smoke (reason) is found in a kitchen which is homogeneous with the fiery things.

(3) It must be totally excluded from cases which are heterogeneous from the predicate, *e.g.*, the smoke (reason) is not found in a lake which is heterogeneous from the fiery things.

The above-mentioned characteristics may be symbolised as follows :—

(1) All S is R,
(2) All R is P,
(3) No R is non-P,

} where *S* stands for the subject, *R* for the reason, and *P* for the predicate.

The subject and predicate combined together constitute a proposition, *e.g.*, This hill (subject is fiery (predicate). A proposition which is offered for proof is a thesis.

Fallacies of the Thesis,
पक्षाभास,
ཕྱོགས་ལྟར་སྣང་

The undermentioned nine types thesis are fallacious :—

1. Thesis inconsistent with perception, མངོན་སུམ་གྱིས་བསལ་བ, *e.g.*—

Sound is inaudible.

2. Thesis inconsistent with inference, རྗེས་སུ་དཔག་པས་བསལ་བ, *e.g.*—

A pot is eternal.

3. Thesis inconsistent with the public understanding འཇིག་རྟེན་པས་བསལ་བ, *e.g.*—

Man's head is pure,
Because it is the limb of an animate being.

4. Thesis inconsistent with one's belief or doctrine, ཡིད་ཆེས་པས་བསལ་བ, *e.g.*—

The Vaiśeṣikas maintain that sound is eternal (as a fact the Vaiśeṣikas do not so maintain).

5. Thesis inconsistent with one's own statement, རང་གི་ཚིག་གིས་བསལ་བ, *e.g.*—

My mother is barren.

6. Thesis with the subject unpopular or not well known, ཁྱད་པར་རབ་ཏུ་གྲགས་པ་མ་ཡིན་པ, *e.g.*—

The Buddhist against the Sāṁkhya:
Sound is perishable.

7. Thesis with the predicate unpopular or not well known, ཁྱད་པར་ཅན་རབ་ཏུ་གྲགས་པ་མ་ཡིན་པ, *e.g.*—

The Sāṁkhya against the Buddhist:
Self is possessed of a soul.

8. Thesis with both the subject and predicate unpopular or not well known, གཉིས་ཀ་རབ་ཏུ་གྲགས་པ་མ་ཡིན་པ, *e.g.*—

The Vaiśeṣika against the Buddhist:
The soul is possessed of pleasure and other feelings.

9. Thesis universally known, གྲགས་པས་བསལ་བ, *e.g.*—

Fire is warm.

Owing to the violation of one or more of the three characteristics of the reason already mentioned, there occur fallacies of the reason.

Fallacies of the reason, हेत्वाभास, གཏན་ཚིགས་ལྟར་སྣང་

Fallacies of the reason, mark or middle term are principally of three kinds, each of which is again subdivided thus:—

(*a*) The *unproved* (असिद्ध, མ་གྲུབ) are the fallacies which occur

(i) When the lack of truth in the reason is recognised by both the parties, གཉིས་ཀ་ལ་མ་གྲུབ་པ, *e.g.*—

Sound is non-eternal,
Because it is *visible* (reason).

Here neither party admits that sound is visible.

(ii) When the lack of truth in the reason is recognised by one party only, གང་ཡང་རུང་བ་ལ་མ་གྲུབ་པ, *e.g.*—

Sound is manifest,
Because it is a product.

The Mimāṁsakas do not admit that sound is a product).

(iii) When the truth in the reason is questioned ཐེ་ཚོམ་ཟ་ནས་མ་གྲུབ་པ, *e.g.*—

The hill is fiery,
Because it has vapour.

(It is a matter of doubt whether vapour is'an effect of fire).

(iv) When the existence of that signified by the reason, in the subject, is doubted, གཞི་མ་གྲུབ་པ, *e.g.*—

The sky is a substance,
Because it is a seat of qualities.

(It is doubtful whether there are qualities in the sky).

(*b*) The uncertain (अनिश्चित, མ་ངེས་པ) are the fallacies which occur

(v) When things denoted by the reason consist of all things homogeneous with and all things heterogeneous from things denoted by the predicate, ཐུན་མོང་, *e.g.*—

Sound is eternal,
Because it is knowable.

(vi) When that signified by the reason is included in none of the cases which are homogeneous with or heterogeneous from the predicate ཐུན་མོང་མ་ཡིན་པ, *e.g.*—

Sound is eternal,
Because it is audible.

(vii) When things denoted by the reason consist of some things homogeneous with and all things heterogeneous from things denoted by the predicate, མཐུན་ཕྱོགས་ཀྱི་ཕྱོགས་གཅིག་ལ་ཡོད་ལ་མི་མཐུན་ཕྱོགས་ལ་ཁྱབ་པ, *e.g.*—

Sound is not a product of effort,
Because it is non-eternal.

(viii) When things denoted by the reason consist of some things heterogeneous from and all things homogeneous with things denoted by the predicate, མི་མཐུན་ཕྱོགས་ཀྱི་ཕྱོགས་གཅིག་གི་ལུས་ལ་ཡོད་ལ་མཐུན་ཕྱོགས་ལ་ཁྱབ་པ, *e.g.*—

Sound is a product of effort,
Because it is non-eternal.

(ix) When things denoted by the reason consist of some things homogeneous with and some things heterogeneous from things denoted by the predicate, གཉིས་ཀའི་ཕྱོགས་ཅིག་གི་ལུས་ལ་ཡོད་པ, *e.g.*—

Sound is eternal,
Because it is incorporeal.

(x) When the contradiction (between the reasons advanced by two parties respectively) is unerroneous, འགལ་བ་ལ་མི་ཁྲུལ་བ, *e.g.*—

Sound is non-eternal, Because it is a product.	Sound is eternal, Because it is always audible.

(c) The Inconsistent (**विरुद्ध, འགལ་བ**) are the fallacies which occur.

(xi) When the reason is inconsistent with the predicate itself, ཆོས་ཀྱི་རང་བཞིན་ཕྱིན་ཅི་ལོག་ཏུ་སྒྲུབ་པར་བྱེད་པ, *e.g.*—

Sound is eternal,
Because it is a product.

(xii) When the reason is inconsistent with the implied predicate, ཆོས་ཀྱི་ཁྱད་པར་ཕྱིན་ཅི་ལོག་ཏུ་སྒྲུབ་པར་བྱེད་པ, *e.g.*—

The eye, etc., are serviceable to some being,
Because they are compounds.

Here the word "being" is ambiguous, signifying (1) the body as well as (2) the soul. It is in this second meaning which is implied in the predicate, that the reason is inconsistent with it according to the Sāṁkhya philosophy which describes the soul as free from all attributes.

(xiii) When the reason is consistent with the subject itself,

ཆོས་ཅན་གྱི་རང་བཞིན་ཕྱིན་ཅི་ལོག་དུ་བསྒྲུབ་པར་བྱེད་པ,

e.g.—

Class (or generality) is neither substance, quality nor action.
Because it depends upon one substance, and possesses quality and action

Here "class" does not depend upon one substance

(xiv) When the reason is inconsistent with the implied subject

ཆོས་ཅན་གྱི་ཁྱད་པར་ཕྱིན་ཅི་ལོག་དུ་བསྒྲུབ་པར་བྱེད་པ,

e.g.—

Objects are the stimuli of actions,
Because they are apprehended by the senses.

Here the word "objects" is ambiguous, meaning (1) things as well as (2) purposes. In the second meaning which is implied in the subject, that the reason is inconsistent with it.

Fallacies of the homogeneous example,
साधर्म्य दृष्टान्ताभास,
ཆོས་མཐུན་དཔེ་ལྟར་སྣང་བ

Fallacies of the homogeneous example occur

1. When an example is not homogeneous with the reason,

སྒྲུབ་པར་བྱེད་པའི་ཆོས་མ་གྲུབ, *e.g.*—

Sound is eternal,
Because it is incorporeal,
All things incorporeal are eternal,
Like the atoms of dust.

Here the atoms of dust cannot serve as an example because they are not homogeneous with the "incorporeal" which is the reason. This is called the fallacy of excluded reason.

2. When an example is not homogeneous with the predicate,

བསྒྲུབ་པར་བྱ་བའི་ཆོས་མ་གྲུབ་པ, *e.g.*—

Sound is eternal,
Because it is incorporeal,
Whatever is incorporeal is eternal,
Like intelligence.

Here intelligence cannot serve as an example because it is not homogeneous with the "eternal" which is the predicate. This is called the fallacy of excluded predicate.

3. When an example is homogeneous with neither the reason nor the predicate, གཉིས་ཀའི་ཆོས་མ་གྲུབ་པ, *e.g.*—

Sound is eternal.
Because it is incorporeal,
Whatever is incorporeal is eternal,
Like a pot.

Here the pot cannot serve as an example because it is homogeneous with neither the "incorporeal" which is the reason, nor the "eternal" which is the predicate. This is called the fallacy of excluded reason and predicate.

When there is an absence of connection between the reason and the predicate, རྗེས་སུ་འགྲོ་བ་མེད་པ, *e.g.*—

This person is full of passions,
Because he is a speaker, .
Whoever is a speaker is full of passions,
Like a certain man in Magadha.

This is called the fallacy of the absence of connection.

5 When there is an inverted connection between the reason and the predicate, རྗེས་སུ་འགྲོ་བ་ཕྱིན་ཅི་ལོག་པ, *e.g.*—

Sound is adventitious,
Because it is non-eternal,
Whatever is non-eternal, is adventitious,
Like a pot.

This is called the inverted affirmation of the example.

Fallacies of the heterogeneous example,
वैधर्म्य दृष्टान्ताभास,
ཆོས་མི་མཐུན་དཔེ་
ལྟར་སྣང་བ་

Fallacies of the heterogeneous example occur

1. When an example is not heterogeneous from the opposite of the reason, སྒྲུབ་པར་བྱེད་པ་ལྡོག་པ་མེད་པ, *e.g.*—

   Sound is eternal,
   Because it is incorporeal,
   Whatever is non-eternal is not incorporeal,
   Like the atoms of dust.

Here the atoms of dust cannot serve as an example because they are not heterogeneous from those which are opposite of the "incorporeal" which is the reason. This is called the fallacy of included reason.

2. When an example is not heterogeneous from the opposite of the predicate, སྒྲུབ་པར་བྱ་བ་ལྡོག་པ་མེད་པ, *e.g.*—

   Sound is eternal,
   Because it is incorporeal,
   Whatever is non-eternal is not incorporeal,
   Like intelligence.

Here intelligence cannot serve as an example because it is not heterogeneous from the contrary of the "eternal" which is the predicate.

3. An example heterogeneous from neither the contrary of the reason nor the contrary of the predicate, གཉིས་ཀ་ལྡོག་པ་མེད་པ, *e.g.*—

   Sound is eternal,
   Because it is incorporeal,
   Whatever is non-eternal is not incorporeal,
   Like a pot.

Here the pot cannot serve as an example because it is heterogeneous from neither the contrary of the "incorporeal" which is the reason, nor the contrary of the "eternal" which is the predicate. This is called the fallacy of included reason and predicate.

4. When there is no connection between the reason and the predicate, ལྡོག་པ་མེད་པ, *e.g.*—

   This person is passionate,
   Because he is a speaker,
   Whoever is non-passionate is not a speaker,
   Like a piece of stone.

This is called the fallacy of the absence of disconnection.

5. When there is an inverted connection between the reason and the predicate, ལྡོག་པ་ཕྱིན་ཅི་ལྡོག་པ, *e.g.*—

> Sound is adventitious,
> Because it is non eternal,
> Whatever is non-adventitious is not non-eternal,
> Like the sky.

Valid knowledge,
प्रमाण,
ཚད་མ་

There are two kinds of valid knowledge, *viz*, perception (**प्रत्यक्ष, མངོན་སུམ**) and inference (**अनुमान རྗེས་སུ་དཔག་པ**).

Perception is that which is freed from illusory experiences. It is the knowledge which is derived through the channels of the senses without reflection of the objects of sense, name, genus, etc.

Inference is the knowledge of an object through the reason or middle term, such as a pot is non eternal because it is a product.

There are fallacies of perception (**प्रत्यक्षाभास, མངོན་སུམ་ལྟར་སྣང་བ**) and of inference (**अनुमानाभास, རྗེས་དཔག་ལྟར་སྣང་བ**).

Refutation (**दूषण, སུན་འབྱིན**) consists in finding out any of the fallacies enumerated above in the speech of the opponent. The semblance of refutation (**दूषणाभास, སུན་འབྱིན་ལྟར་སྣང་**) consists in alleging fallacies in a speech which is really not fallacious.[1]

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[1] I beg to acknowledge with thanks that I have derived much help from Dr. Sugiura's "Hindu Logic as preserved in China and Japan."

75. A note on Sign-, Gesture-, Code-, and Secret-language, etc., amongst the Persians.

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

Apart from the mercantile sign-language and the horse-dealer's jargon of India, mentioned in Nos. 7 and 10 of the Journal of 1906, are the signs, signals, and gestures, secret or otherwise, used by the Persians in their everyday life. To the following, in daily use amongst the Persians, reference is frequently made in the idioms of writers, ancient and modern :—

Silence : *Angusht bi-sar-i dimāgh zadan*, انگشت بسر دماغ زدن (1) The right hand is closed, with the exception of the forefinger which is placed perpendicularly, point upwards, so that its middle joint touches the tip of the nose, the front of the finger being to the left; *or* (2) the tip of the forefinger is laid on the nose; *or* (3) very rarely the tip of the forefinger is placed on the *closed* lips as in England. (4) Biting the lower lip is a secret sign to keep quiet.

Come here : *Biyā*, بیا.—As in India, *i.e.*, the right arm is raised and partially extended on a level with the shoulder, the palm of the hand being downwards. The signal is then made either by closing the fingers towards the palm a few times, or by scooping the hand downwards and towards the speaker.

No : نَه.—As in India. Either (1) the open right hand, palm to the front, is held level with the head and agitated from side to side, additional emphasis being sometimes given by turning the head to the left, closing the eyes and smiling idiotically with closed lips; *or* (2) the head is slightly thrown back and the eyes closed. This, also, when signalled secretly, =*juzv-i havā ast* "he's talking rot." (3) Secretly and slightly raising the eyebrows signifies "No" or "Don't do it," and also "Ask him." In the latter case the head is slightly turned towards the person to be questioned.

Yes : *Dast bar chashm nihādan.*—(1) The closed fingers of the open right hand, back to the front, are placed on the right eye: this action, often accompanied by the reply "*Chashm*," signifies implicit obedience. (2) The right hand is placed on the left breast and a bow is made. (3) As a secret sign, by lowering the eyelids.

Astonishment : *Angusht gazīdan* or *angusht-i taḥayyur*, etc., *gazīdan*. The tip of the forefinger of the right hand is laid on the front teeth of the lower jaw. This action is commonly depicted in paintings of the first meeting of *Farhād* with *Shīrīn.*

The Afghans place the forefinger, front foremost, (the remaining fingers being closed, palm of the hand to the front), transversely between the jaws, and bite it, opening the eyes at the same time in an astonished gaze.

HALT : *Vā īst.* وا ایست.—(1) The right arm is held up horizontally as in the British Cavalry signal ; *or* (2) the right hand, open and extended, is held up, palm to the front, a little above the level of the shoulder.

GO OUT : *Bīrūn bi-rau,* بیرون برو. The chin is slightly poked forwards.

HE'S CRACKED : *Dimāgh-ash khusk ast,* دماغش خشک است. (1) The right side of the nose or the right temple is tapped with the tip of the forefinger.

ALL GAS *or* HE'S TALKING ROT.—The open right hand is drawn down across the mouth from the wrist to the tips of the fingers, being blown on at the same time.

The key to spoken secret-languages is usually to be found in certain letters or syllables inserted after each syllable of the word proper. Thus, in the *zubān-i murghī* or "the fowl's language," the letter *rā* (ر) is added to the first, and the letter *ghagn* (غ) to the second, syllable : *kitāb* "book" becomes *kirtighāb* ; *bi-dih* "give," *birdigha* ; *bir-mi-ghān* = *bi-man* ; *nirghān* = *nān.* In the *zabān-i zargarī* or "goldsmiths' language" a *zā* (ز) is inserted after each letter and vowelled as shewn in the following examples : *kitāb* becomes *kizitazāb ; qālī* becomes *qizālizī ; musharraf* becomes *muzishazarrazaf. Shuzumazā bi-zu bi-zuguzash kaz shuzumazā fazardazā biziyazāyazīd khazānaza mazā* = شما باو بگوش که شما فردا بیائید خانه ما

In other secret Persian languages, which appear to have no special distinguishing names, the key lies, (1) In a *lām-i mushaddad* (لّ) inserted after each letter and vowelled as shewn in the examples : *nān* = *nillān* ; *kitāb* = *killa tillāb.* (2) In a single *vāv* (و) instead of the *lām-i mushaddad* ; thus *kitāb* = *kauki-tautāb* ; *bi-dih* = *baubi-daudih.* (3) In changing the first letter of every word into *sīn* (س) and affixing the word *kaydī* to the end of the word. If the first letter of the word proper is *sīn* it is changed into *jīm* (ج). (4) In making palindromes or even anagrams of every word ; as *shīr* = *rīsh* ; *kitāb* = *bikāt* or *tikāb.* To an ordinary European this is extremely difficult.

Similar systems are in vogue in English girl-schools. The key to one common English system lies in *rig* which is added after every syllable. Thus "I" is *I-rig-I* ; "speak" is *spe-rig-eak* ; "blossom" is *blo-rig-os—so-rig-om.*

The ladies of a Persian household often have a code-word of their own. For instance, if the attendant be addressed as *Banafsha* or "Violet," a common name of negresses, it might signify "Bring coffee," whereas *Bājī* "Sister" might signify "Bring the second-best sweets."

There is, or perhaps was, a kind of "Language of Flowers" by which "object letters," as Rudyard Kipling styles them, may be sent. For instance, cardamoms, *hil* هل, signify *halāk-am* هلاکم, "I am dead (on your account)"; pomegranates *anār* انار, *bīmār-am* بیمارم "I am sick for thee," or *mī-suzam* میسوزم, "I burn in thy love"; *turanj* "citron," *dar 'ishq-i tu tanj (tab) dāram* در عشق تو رنج (تب) دارم, "I am fevered for love of thee"; *dār-chīnī* cinnamon, *dar khāna hīch nīst* در خانه هیچ نیست. "there is nothing in the house,[1] *i.e.*, I am too poor to give you anything"; apples *sīb*=*būsa mī-khwāham* بوسه میخواهم, "I want a kiss"; pistachio nuts *pista*[2] پسته=*būsa-yi labhā-yi turā mī-khwāham* بوسهٔ لبهای ترا میخواهم. "I want a kiss of thy lips"; the jujube fruit *'unnāb*=ditto. *Sīb*, "apples," however, may signify *sīrī* "satiety," *i.e.*, "I am weary of you." A Persian friend of the writer told him that once in his family a quarrel arose from the misinterpretation of a present of apples sent by him to his cousin, to whom he was half-engaged

In the pathetic story of "*Azeez and Azeezeh*" in the first volume of Lane's Arabian Nights, there are many instances of the Eastern sign-language at which Eastern women are such adepts.

The fourth story of the *Nafhatᵘ 'l-Yaman* relates how an Arab fell in love with a damsel at first sight and wrote proposing an assignation. The reply was merely a gold button and a bit of ambergris. The recipient was puzzled, but his small daughter at once solved the difficulty and explained that زر *zurr* "button" signified زر *zur* (Imperative) "visit," while the black ambergris meant "the secrecy of night."

The *Ḥa'batᵘ 'l-Kumayt*, an Arabic treatise on wine, relates that a certain Sultān, angered with Al-Mutanabbī the famous poet, threatened to kill him. To entice him back into his power the Sultan directed his secretary to write him a flattering letter. The secretary was an old friend of Al-Mutanabbi. When he reached the customary words that end many Arabic letters, namely, *In shā' Allah* ان شاء الله, he placed a *tashdīd* over the *nun* of the first word, writing it إنّ. The Sultan read the letter and affixed his seal. Al-Mutanabbi however noticed the incorrect *tashdīd*, pondered on it, and then fled; for amongst the many passages of the Qurʾān commencing with إِنَّ is the following:—

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[1] *Dār* = Arabic "house"; *chīdan* (*rt. chīn*) = *var chīdan* : cinnamon is hollow.

[2] Poets compare a mistress's lips to the *pista*. When boiled the shell of the *pista* opens like parted lips and shows a red streak inside.

إِنَّ الْمَلَأَ يَأْتَمِرُونَ بِكَ لِيَقْتُلُوكَ فَاخْرُجْ إِنِّي لَكَ مِنَ النَّاصِحِينَ

"Verily the chiefs are deliberating to kill them; so depart. I give thee sage advice."—*Qur.*, XXVIII, 19.

Al-Mutanahbi replied to the Sultan, adding an *alif* to the word إِنَّ of the terminating words of the letter, and the secretary on reading the reply guessed that the reference was to the passage beginning

إِنَّا لَنْ نَدْخُلَهَا أَبَدًا مَا دَامُوا فِيهَا

"Verily we will never enter it so long as they are there."—*Qur.*, V, 27.

For the *K͟haṭṭ-i Shajarī* or Tree-writing, and for several other adaptations of the *Abjad* system to secret signalling—methods used by Dervishes—*vide* Browne's "A Year Amongst the Persians."

76. Description of a *Jām-i-chihil kalīd*, such as that referred to in Lane's Modern Egyptians, page 254.

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

That now described is a bowl (*jām*), of brass, 6¾ inches in diameter, with a rimmed edge and a small dome in the centre. To a hole in the rim is attached a string, at the end of which are 40 small pieces of brass called *kalīd* or "keys." On the upper side of the rim of the bowl is engraved the *Sūra-yi Fātiḥa.* On the dome is engraved:

لا اله الا الله لا اله الا الله

and certain *a'dād-i-ṭilism*, or numerals giving the numerical value of some of the names of God, or of certain passages from the Qur'ān.

On the bottom, round the dome, are the names of God and the "*Panj Tan*,"[1] that is to say الله محمد علی فاطمة حسن و حسین

The space between the bottom and the rim is occupied by the *Āyat*^{u} *'l-Kursī* (which is part of the *Sūrat*^{u} *'l-Baqarah*) and by the whole of the *Sūrat*^{u}*-'l-Ikhlāṣ.*

On the under side of the rim are numerous other *a'dād-i-ṭilism.*

On the outside of the bowl is the *Sūrat*^{u} *'n-Nās*, at the bottom being a line of *a'dād-i-ṭilism.*

Each of the "keys" bears on one side the words بسم الله and on the other الرحمن الرحیم.

Bowls such as these vary in size, and there are often differences in the inscriptions.

For use, the bowl is filled with water, which is stirred with the forty keys forty times. The fingers are then dipped in the water and applied to the eyes and throat of a sick child, and a small quantity of the holy water is also given it to drink. For a grown-up person possessed by a devil, the water is sprinkled over the head and body. The water that remains over, after use, is cast into a well or poured over the roots of trees, for it must not be trodden under foot.

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[1] The names of the "*Panj Tan*" indicate that this particular bowl is of Shī'ah make.

77. A Method for producing immediate Germination of "Hardcoated" Seeds.

By R. S. Finlow and C. J. Bergtheil.

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The recent substitution of the Java-Natal variety of Indigo (*Indigofera arrecta*) for *Indigofera sumatrana* in Bihar, was at first hindered by the fact that the seed of *I. arrecta* possesses a hard coat which prevents an even germination unless it is treated, before sowing, in such a way as to break through the outer resistant material. This difficulty was originally surmounted by Mr. E. F. Watson of Muzaffarpur, who invented a machine in which the hard coat was scratched so that water could penetrate it and cause the seed to germinate. Latterly, a chemical method has been successfully introduced by one of us (C. J. B.), *viz.*, treatment of the seed with concentrated sulphuric acid until the hard coat is dissolved. This method, which was probably first used in India by Dr. E. J. Butler, the Imperial Mycologist, in some experiments with cotton seed, has now been applied to the seed of a series of wild fibre plants with satisfactory results. The treatment is simple, consisting, as it does, merely in immersing the seed in concentrated sulphuric acid for a sufficiently long period and subsequently washing it in water. After drying, it is ready for sowing. Different seeds vary widely in the length of treatment with sulphuric acid which they require; but the correct time can easily be gauged by one or two preliminary experiments on a small scale.

It would appear from the results given in the following table that the development of a hard-coated seed is very common in jungle plants; also that treatment with sulphuric acid is a generally effective method for dissolving the resistant material composing the hard coating:—

Name of plant.	Germination capacity before treatment.	Period of treatment in hours.	Germination capacity after treatment.
Indigofera arrecta, *Hochst.* ...	3%	⅓	95 %
Pentapetes phœnicea, *Linn.* ...	*nil*	4½	92 %
Hibiscus panduræformis, *Burm.* ...	*nil*	8¾	75 %
Abutilon indicum, *Sweet.* ...	15 %	8¾	60 %
Sida rhombifolia, *Linn.* .	1 %	2¼	90 %
Corchorus, spp	*nil*	2	95 %
Sida humilis, *Cav.*	*nil*	1	80 %
Urena sp	15 %	6½	50 %
Corchorus olitorius, *Willd.* ...	*nil*	3	100 %
Melochia corchorifolia, *Linn.* .	10 %	2½	100 %
Corchorus acutangulus, *Lam.* ..	*nil*	2	81 %
Hibiscus ficulneus, *Cav.* ...	*nil*	4	85 %
Malvastrum tricuspidatum, *Gray* ..	*nil*	2½	85 %
Desmodium pulcherrimum, *Shuttlew and Griseb.*	*nil*	2	66 %
Melilotus alba, *Desr.*	1%	40 minutes	90 %

78. Hetu-cakra-hamaru or Dignāga's Wheel of Reasons—recovered from Labrang in Sikkim.

By Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa, M.A.

Hetu-cakra-hamaru is a small treatise on Logic. It was composed by Dignāga, the Father of Mediæval Logic, in Andhra (modern Telingana of the Madras Presidency) about 500 A.D. The Sanskrit original of the work is lost, but a Tibetan translation of it is preserved in the Tangyur, section Mdo, folios 193-194. I brought a copy of it from the monastery of Labrang in Sikkim, which I visited in June 1907.

The Tibetan translation was prepared by the sage Bodhisattva of Za-hor and the Bhikṣu Dharmāśoka. The work in Tibetan is called Gtan-tshigs-kyi-ḫkhor-lo-gtan-la-ḏwab-pa (གཏན་ཚིགས་ཀྱི་, འཁོར་ལོ་གཏན་ལ་དབབ་པ) signifying "the Wheel of Reasons put in order." It begins thus:—

འཁྲུལ་པའི་དྲ་བ་འཇོམས་མཛད་པའི།།
ཐམས་ཅད་མཁྱེན་ལ་ཕྱག་འཚལ་ནས།།
གཏན་ཚིགས་ཚུལ་གསུམ་ཁོ་བོ་ཡི།།
གཏན་ལ་དབབ་པ་བཤད་པར་བྱ།།

"Bowing down to the Omniscient One (Buddha) who has destroyed the net of errors, I explain the system of three characteristics of the Reason (Middle Term of a Syllogism)."

Three characteristics of the reason or middle term (གཏན་ཚིགས་ནི་ཚུལ་གསུམ) are:—

1. ཕྱོགས་ཀྱི་ཆོས་ཉིད་དང་།

The middle term must cover the minor term (*pakṣa*, ཕྱོགས) *e.g.*:—

Sound is non-eternal,
Because it is adventitious,
Like a pot but unlike ether.

In this reasoning "adventitious," which is the middle term, covers "sound," which is the minor term.

2. མཐུན་པའི་ཕྱོགས་ཉིད་ལ་ཡོད་པར་ངེས་པ་དང་ ||

All things denoted by the middle term must be homogeneous with things denoted by the major term, *e.g.*:—

In the above reasoning "all adventitious things are non-eternal as a pot."

3. མི་མཐུན་པའི་ཕྱོགས་ལ་མེད་པ་ཉིད་དུ་ངེས་པ་ཡང་ངོ་ ||

None of the things denoted by the middle term must be heterogeneous from things denoted by the major term, *e g.*:—

In the above reasoning "no adventitious thing is non-non-eternal (*i.e.*, eternal) or no non-non-eternal (*i.e.*, eternal) thing is adventitious as ether.

If we suppose the minor term or subject to be S, the middle term or reason to be R, and the major term or predicate to be P, then the above-mentioned three characteristics may be symbolically set forth as follows:—

1. All S is R, or simply, S is R.
2. All R is P, or simply, R is P.
3. No non-P is R, or, No R is non-P.

There are nine possible relations between the middle term and the major term. Dignāga has examined them all and found that only two of them conform to the above three characteristics, while the rest violate one or more of the characteristics. The nine possible relations are set forth in the following diagram:—

ཕྱོགས་ཆོས་དགུའི་འཁོར་ལོ་བཞུགས་སོ།།

1 སྒྲ་ནི་རྟག་སྟེ། གཞལ་བྱ་ཡིན་པའི་ཕྱིར། ནམ་མཁའ་བཞིན་དང་བུམ་པ་བཞིན་ནོ། མཐུན་མི་མཐུན་པའི་ཐམས་ཅད་ལ་ཡོད་དོ།། དངོས་ཀྱི་མ་ངེས་པ་ཡིན་པར་བཤད།།	2 སྒྲ་ནི་མི་རྟག་སྟེ། བྱས་བའི་ཕྱིར། བུམ་པ་དང་ནམ་མཁའ་བཞིན་ནོ། མཐུན་ཕྱོགས་ལ་ཡོད་ མི་མཐུན་ཕྱོགས་ལ་མེད། རྟགས་ཡོད་དག་ཡིན་ནོ་ཨོང་ །།	3 སྒྲ་ནི་རྩོལ་བ་ལས་བྱུང་སྟེ། མི་རྟག་པའི་ཕྱིར། བུམ་པ་དང་གློག་དང་ནམ་མཁའ་བཞིན། མཐུན་པའི་ཕྱོགས་ཐམས་ཅད་ལ་ཡོད་ མི་མཐུན་ པའི་ ཕྱོགས་ གཉིས་ཀ་དངོས་ཀྱི་མེད་པ་ཡིན་པར་བཤད།།
4 སྒྲ་ནི་རྟག་སྟེ། བྱས་བའི་ཕྱིར། ནམ་མཁའ་བཞིན་དང་བུམ་པ་བཞིན་ནོ།། མཐུན་པའི་ཕྱོགས་ལ་མེད་མི་མཐུན་པའི་ཕྱོགས་ལ་ཡོད། འགལ་བའི་གཏན་ཚིགས་ཡིན་པར་བཤད།།	5 སྒྲ་ནི་མི་རྟག་སྟེ། མཉན་བྱ་ཡིན་པའི་ཕྱིར། བུམ་པ་ནམ་མཁའ་བཞིན་ནོ། མཐུན་པའི་ཕྱོགས་ལ་ མེད་མི་མཐུན་ པའི་ཕྱོགས་ལ་མེད། ཐུན་མོང་མ་ཡིན་པའི་གཏན་ཚིགས་སོ།།	6 སྒྲ་ནི་རྟག་སྟེ། རྩོལ་བ་ལས་བྱུང་བའི་ཕྱིར། ནམ་མཁའ་བཞིན་དང་བུམ་པ་དང་གློག་པ་བཞིན་ནོ། འགལ་བའི་གཏན་ཚིགས་ཡིན་པར་བཤད།།
7 སྒྲ་ནི་རྩོལ་བ་ལས་མི་བྱུང་སྟེ། མི་རྟག་པའི་ཕྱིར། གློག་བཞིན་དང་ནམ་མཁའ་བུམ་པ་བཞིན། མཐུན་པའི་ཕྱོགས་གཉིས་ཀ་མི་ མཐུན་ པའི་ཕྱོགས་ ཐམས་ ཅད་ ལ་ཡོད་དེ་དངོས་ཀྱིའོ།།	8 སྒྲ་ནི་མི་རྟག་སྟེ། རྩོལ་བ་ལས་བྱུང་བའི་ཕྱིར། བུམ་པ་གློག་དང་ནམ་མཁའ་བཞིན། མཐུན་པའི་ཕྱོགས་གཉིས་ཀ། མི་མཐུན་པའི་ཕྱོགས་ལ་མེད་ཡང་དག་གོ།།	9 སྒྲ་ནི་རྟག་སྟེ། ལུས་ཅན་ལ་ཡིན་པའི་ཕྱིར། ནམ་མཁའ་དང་རྡུལ་ཕྲན་དང་ལས་དང་བུམ་པ་བཞིན། མཐུན་པའི་ཕྱོགས་གཉིས་ ཀ་མི་ མཐུན་པའི་ཕྱོགས་ ལ་དངོས་གཉིས་ཀྱིའོ།།

THE WHEEL OF REASONS.

(*Nine possible relations between the Middle Term and the Major Term in a syllogism*).

1 Sound is eternal, Because it is knowable, Like ether and like a pot. Here the 'knowable' (which is the reason or middle term) abides in *all* things homogeneous with, and *all* things heterogeneous from, the 'eternal' (which is the major term). The reason or middle term is too general. Truth is uncertain.	2 Sound is non-eternal, Because it is adventitious, Like a pot and like ether. Here the 'adventitious' (which is the reason or middle term abides in *all* things homogeneous with but does *not* abide in any thing heterogeneous from the 'non-eternal' (which is the major term). **The reasoning is valid.** Well!	3 Sound is a product of effort, Because it is non-eternal, Like a pot, like lightning and like ether. Here the 'non-eternal' (which is the reason or middle term) abides in *all* things homogeneous with, and *some* things heterogeneous from, the product of effort (which is the major term). Truth is uncertain.
4 Sound is eternal, Because it is adventitious, Like ether and like a pot. Here the 'adventitious' (which is the reason or middle term) abides in *nothing* homogeneous with. but in *all* things heterogeneous from the 'eternal' (which is the major term). The reason or middle term is inconsistent with the major term.	5 Sound is non-eternal, Because it is audible, Like a pot and like ether. Here the 'audible' (which is the reason or middle term) abides in *nothing* homogeneous with, and in *nothing* heterogeneous from, the 'non-eternal' (which is the major term). The reason or middle term is not general enough. Truth is uncertain.	6 Sound is eternal, Because it is a product of effort, Like ether, like a pot and like lightning. Here the 'product of effort' (which is the reason or middle term) abides in *nothing* homogeneous with. but in *some* things heterogeneous from the 'eternal' (which is the major term). The reason or middle term is inconsistent with the major term.
7 Sound is a non-product of effort, Because it is non-eternal, Like lightning like ether, and like a pot. Here the 'non-eternal' (which is the reason or middle term) abides in *some* things homogeneous with, and in *all* things heterogeneous from. the 'product of effort' (which is the major term). Truth is uncertain.	8 Sound is non-eternal, Because it is a product of effort, Like a pot, like lightning and like ether. Here the 'product of effort' (which is the reason or middle term) abides in *some* things homogeneous with, but in *nothing* heterogeneous from the 'non-eternal' (which is the major term). **The reasoning is valid.** Well!	9 Sound is eternal, Because it is corporeal. Like ether, like atoms of dust, like action and like a pot. Here the 'corporeal' (which is the reason or middle term) abides in *some* things homogeneous with, and in *some* things heterogeneous from, the 'eternal' (which is the major term). Truth is uncertain.

ANALYSIS OF THE WHEEL.

1

Sound is eternal,

Because it is knowable (S is R).

(*a*) The knowables are all eternals as ether (R is all P), that is, all eternals are knowables as ether.

(*b*) The knowables are all non-eternals, as a pot (R is all non-P), that is, all non-eternals are knowables as a pot

1. S is R ... right
2. R is all-P ... right
3. R is all non-P ... wrong

} reasoning is unsound.

2

Sound is non-eternal,

Because it is adventitious (S is R).

(*a*) The adventitions are all non-eternals as a pot (R is all P), that is, all non-eternals are adventitious, as a pot.

(*b*) No non-eternals are adventitious as ether, that is, non-adventitious are no non-eternals as ether (R is no non-P).

1. S is R ... right
2. R is all-P ... right
3. R is no non-P ... right

} reasoning is sound.

3

Sound is a product of effort,

Because it is non-eternal (S is R),

(*a*) The non-eternals are all products-of-effort as a pot (R is all P), that is, all products-of-effort are non-eternals as a pot.

(*b*) Some non-product-of-effort is non-eternal as lightning, that is, the non-eternal is some-non-product-of-effort as lightning (R is some non-P).

(*c*) Some non-product-of-effort is not non-eternal as ether, that is, the non-eternal is not some-non-product-of-effort as ether (R is not some non-P).

1 S is R ... right
2. R is all-P . right
3. R is some non-P and R is not some non-P wrong

} reasoning is unsound.

4

Sound is eternal,

Because it is adventitious (S is R).

(*a*) The adventitious are not eternal as ether (R is no P), that is, the eternals are not adventitious as ether.

(*b*) The non-eternals are all adventitious (R is all non-P), that is, the adventitious are non-eternals as a pot.

1. S is R .. right
2. R is no P ... wrong
3. R is all non-P .. wrong

} reasoning is unsound.

5

Sound is non-eternal,

Because it is audible (S is R),

(*a*) The audibles are not non-eternals as a pot (R is no P), that is, the non-eternals are not audibles as a pot.

(*b*) No non-non-eternal (that is, eternal), is audible as ether, that is, no audible is non-non-eternal as ether (R is no non-P).

1. S is R .. right
2. R is no P .. wrong
3. R is no non-P ... right

} reasoning is unsound.

6

Sound is eternal,

Because it is a product of effort (S is R).

(*a* The products of effort are not eternals (R is no P . that is, the eternals are not products of effort, as ether.

(*b*) The products of effort are some non-eternals, as a pot (R is some non-P), that is, some non-eternals are products of effort as a pot.

(*c*) The products of effort are not some non-eternals, as lightning (R is not some non-P), that is, some non-eternals are not products of effort as lightning.

1. S is R ... right
2. R is no P ... wrong
3 { R is some non-P ... R is not some non-P. } wrong

} reasoning is unsound.

ANALYSIS OF THE WHEEL—*continued.*

7	8	9
Sound is a non-product of effort, Because it is non-eternal (S is R). (*a*) The non-eternals are some non-products of effort as lightning (R is some P), that is, some non-products of effort are non-eternals as lightning. (*b*) The non-eternals are not some non-products of effort, as lightning (R is not some-P), that is, some non-products of effort are not non-eternals as ether. (*c*) The non-eternals are all non-products of effort as a pot (R is all non-P). 1. S is R ... right 2. R is some P ... R is not some-P ... } right 3. R is all non-P ... wrong } reasoning is unsound.	Sound is non-eternal, Because it is a product of effort (S is R). (*a*) The products of effort are some non-eternals, that is, some non eternals are products of effort as a pot (R is some P). (*b*) The products of effort are not some non-eternals as lightning (R is not some P), that is, some non-eternals are not products of effort as lightning. (*c*) The non-non-eternals are not products of effort, as ether, that is, the products of effort are no non-non-eternals as ether (R is no non-P). 1. S is R ... right 2 R is some-P .. R is not some-P ... } right 3. R is no non-P .. right } reasoning is sound.	Sound is eternal, Because it is corporeal (S is R)? (*a*) The corporeals are some eternals as atoms (R is some P), that is, some eternals are corporeals as atoms. (*b*) The corporeals are not some eternals, as ether (R is not some P), that is, some eternals are not corporeals as ether. (*c*) The corporeals are some non-eternals as a pot (R is some non-P). (*d*) The corporeals are not some non-eternals as an action (R is not some non-P). 1. S is R? ... wrong 2. R is some P . R is not some P ... } right 3. R is some non-P ... R is not some non-P. } wrong } reasoning is unsound.

79. On three varieties of *Corchorus capsularis*, Linn., which are eaten.

By I. H. BURKILL and R. S. FINLOW.

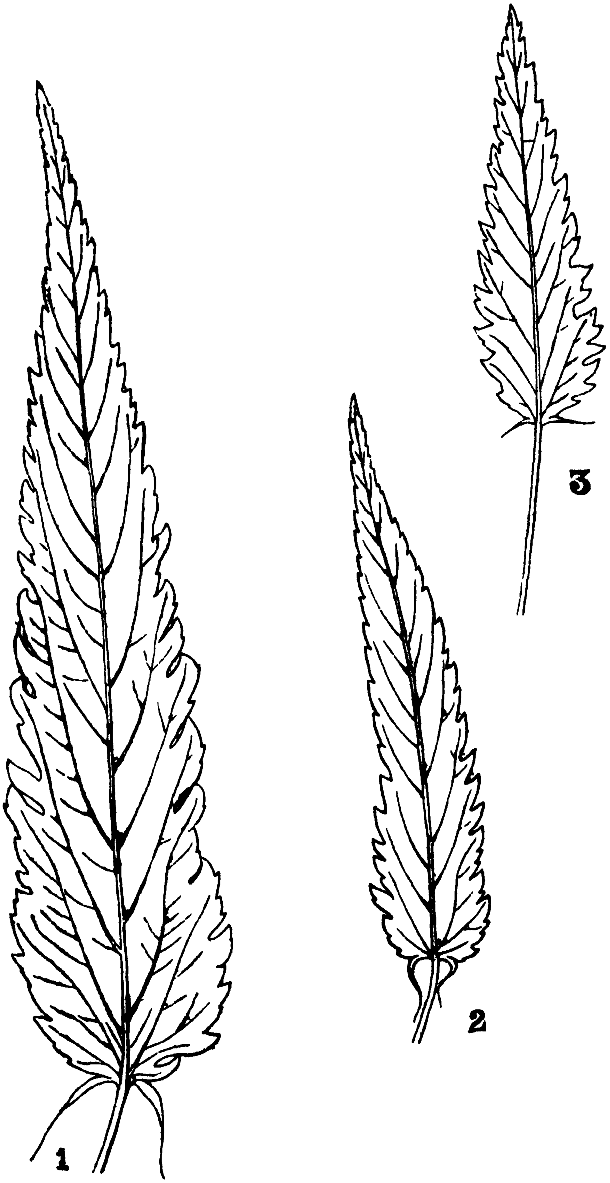
One result of our study of jute has been the re-discovery of Buchanan-Hamilton's *Corchorus Marua*, which, as it is only a variety of *C. capsularis*, we shall call *C. capsularis*, var., *Marua*. We publish in the following pages some notes upon it and upon other allied comestible forms of *C. capsularis*, together with figures of their characteristic leaves.

Corchorus capsularis, var. *Marua*, was found by Buchanan-Hamilton on June 30th, 1809, at Gongachora, some ten miles north of Rangpur. He collected two specimens now preserved at the Linnean Society's rooms in London, where they were examined and decided to be *C. capsularis* by Dr. Maxwell Masters (see his account of the Tiliaceæ in Sir Joseph Hooker's Flora of British India, i., 1872, p. 397). It was found again in 1905 by Mr. D. Hooper on a forest clearing at Hazárikhil near Phátikchári in the District of Chittagong; and in 1906 we found it in gardens at Purneah. By the kindness of Mr. B. Daydon Jackson, Sec. L.S., we have had most excellent photographs of the type for comparison with our new material.

A second of our varieties, var. *corylifolia*, we found in 1907 in gardens at Jalpaiguri; and the third—var. *pyrifolia*—was found in 1906 in gardens at Fakirganj, west of Jalpaiguri. All the three varieties differ from the type in their small size, in the shapes of their leaves and in not being bitter in taste.

C. capsularis, var. *Marua*, has narrow, elongated leaves, characteristically veined, broadest close to the rounded base, and coarsely doubly dentate-serrate in the lower part.

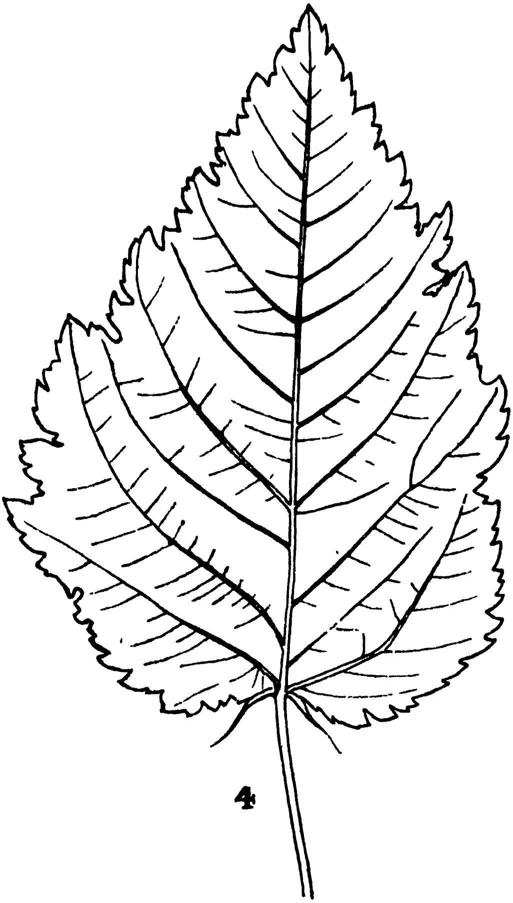
It grows about 3 feet high, and flowers early. In Rangpur it was apparently called 'Marua,' to Hamilton; and in Purneah it is now called "Chira."



***Corchorus capsularis*, var. *Marua*.**

Figs. 1 and 2, from Hazarikhil plants. Fig. 3, from a Purneah plant. Natural size.

Var. *corylifolia* has typically ovate leaves, cordate below, which are veined and doubly dentate-serrate in the same way as the foregoing.

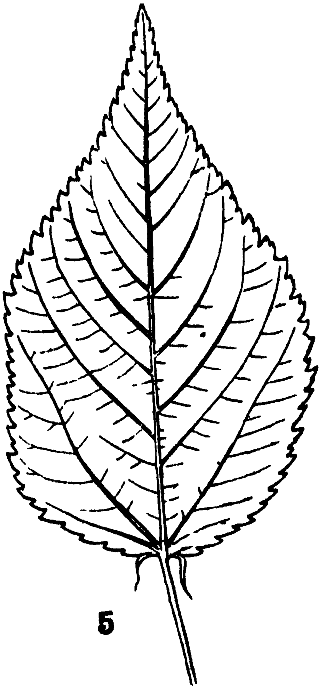


4

Corchorus capsularis, var. *corylifolia.*

Var. *pyrifolia* has typically ovate leaves like the last, but the serration is very fine, and only rarely is it distinctly double; the base of the leaf is rounded, and the venation like that of typical *C. capsularis.*

Both the last two are called " Chiramira " or " Chirua dhápeling " or " Mirua dhápeling."



5

Corchorus capsularis, var *pyrifolia*

Corchorus capsularis :—

Folia nullo modo incisa, nervis majoribus lateralibus basi remotis.
    Folia elongato-ovata ; herba alta, amara forma typica.
    Folia late ovata ; herba minor, sapore dulcis... ... ... var. *pyrifolia*.
Folia subincisa, nervis majoribus lateralibus basi approximatis : herbæ minores, sapore dulces.
    Folia late ovata ... ... var. *corylifolia*.
    Folia lanceolato-ovata ... ... var. *Marua*.

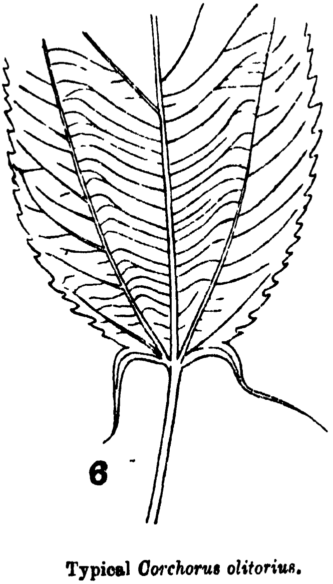
It is interesting that out of *C. capsularis*, which is held in some repute in Bengal as a bitter tonic, we should have to cut three varieties cultivated locally for eating, and not bitter.

The reader will notice that three of the places, at which these comestible races have been found, are in Northern Bengal, *viz* :—

Purneah, Jalpaiguri and Rangpur, while the fourth is rather far away in Chittagong. The possession in common by Purneah, Rangpur and Chittagong of the variety *Marua* suggests a wider distribution yet, which we are now endeavouring to ascertain. Probably its dispersal is, more or less, a result of the rarity of early rains vegetables in Northern and Eastern Bengal. It has been noted that Hamilton found it full grown and flowering in early August, and we found it in the same condition in early August at Purneah; while at Jalpaiguri in early August the varieties *pyrifolia* and *corylifolia* were in flower and had been considerably plucked over.

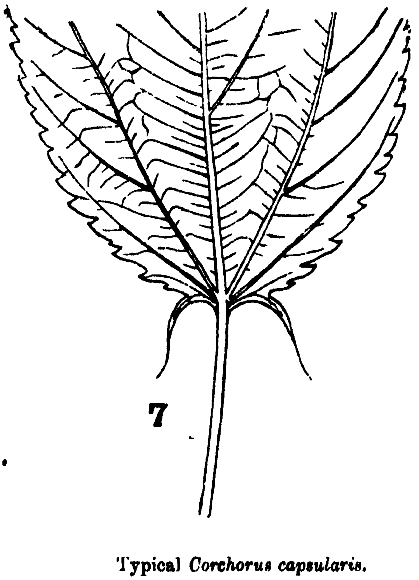
Whatever Hamilton may have written about the plant in his account of Rangpur we do not know, for Montgomery Martin chose to close his volumes (History, Topography, etc., of Eastern India, London, 1838) without Hamilton's chapters on the natural history of that district. But, from a remark which occurs in the account of Purneah (iii., p. 236), we know that Hamilton up to 1811 had only found his *C. Marua* in Rangpur: but he had been told that leaves of *C. capsularis* were eaten in Purneah. What form or variety of *C. capsularis* this could have been, we have no right to guess: evidently Hamilton did not believe it to be var. *Marua*, which is now eaten there.

Before closing we wish to refer to the relationships of these varieties to the type. The following two figures are of the leaves of *C. capsularis* and *C. olitorius*, and are intended to show the



6

Typical *Corchorus olitorius.*



7

Typical *Corchorus capsularis.*

characteristic venation as well as the slight double serration, which is normally present. If the reader will now compare all the figures, he will see that var. *pyrifolia* has the venation of typical *O. capsularis*, and that vars. *Marua* and *corylifolia* have a different venation. Again var. *pyrifolia* has the serration of the leaf as in the type, while the other two varieties have big teeth bearing one or two smaller ones on their sides.

The varieties may be placed thus in a diagram :

	larger lateral veins not arising low down on mid-rib; teeth small.	larger lateral veins arising low down on mid-rib; teeth large.
leaves elongated	type	var. *Marua*
leaves ovate	var. *Pyrifolia*	var. *Corylifolia*

The close parallel veinlets of *O olitorius* never occur in *O. capsularis*, but the double serration is exactly the same. *O olitorius* is never bitter, and is widely eaten as well as grown for fibre ; but still it yields one dwarf variety at least which, like the dwarf varieties of *O. capsularis*, is a garden plant. We shall discuss it on another occasion.

80. Narnaul and its Buildings *(Continued).*

By G. Yazdani, M.A.

(3) THE TOMB OF S̱HAH WILAYAT.

Opposite to Ibrahim S̱hah's tomb, to the west of it, is situated the tomb of S̱hah Wilayat. It is a building of the Tughlaq period. The author of Gulzar says that the eastern colonnades and the dome were erected by 'Alam K̲h̲an Mewati in 760 A.H. or 1357 A.D. A portion of the enclosure also was built by him. The remaining portion of the building is quite modern. The old portion has all the stern simplicity and grandeur which are the characteristics of the *middle* Pathan style. The arches, after the fashion of the time, have the ogee curve, and the roofs are of the ordinary Jaina style, similar to the diagram of roofing, No. 114, given in Fergusson's History of Indian Architecture (p. 214). The tomb itself is surmounted by a bulbous-shaped dome, crested by a finial of the Pathan style. The interior of the tomb is a perfect square. It has some paintings, but they are quite modern. The corners are decorated by pendentives. The building is in a very good state of preservation and needs no repairs. But, unfortunately, it has undergone a very bad whitewashing; if this can be scraped off, the beauty of the building will be greatly enhanced. There is an inscription over the doorway of the tomb, which I have read as follows :—

Text.

(1) سر سروران پیر ترک بوقتی که رحلت نمود از جهان

(2) پئے سال فوتش دبیر خرد بگفت آه از قد ره عارفان [1]

۵۳۱ هجری

Translation.

(1) The chief of chiefs, the old Turk, when he departed from this world:

(2) The scribe of Wisdom, for the year (the chronogram) of his death, said, "Alas! he was a model to saints."—531 A.H. = 1137 A.D.

(4) THE TOMB OF S̱HAH NIZAM.

The building is of Akbar's time, and though then the style was greatly changed at the capital, yet in places distant from it the old style was still prevalent. The tomb itself is a square tower of the usual Pathan style. It has an inscription over its doorway, which reads as follows:—

---

[1] The numerical value of the underlined sentence gives the number 531, which is the *hijra* year of the saint's death.

Text.

(1) دردا که رفت مرشد عالم نظام شرع
کز نور محض طينت پاکش سرشته بود
(2) شيخ بزرگوار چو خلق فرشته داشت
تاريخ رحلتش که شمردم فرشته بود
٩٩٧ هجري

Translation.

(1) Alas! the leader of the world, the administrator of religion, has passed away, whose holy nature was kneaded out of pure light.

(2) The exalted Shaikh, as he had an angelic disposition, so when I counted the date of his death, it came out, "He was an angel."—997 A.H. = 1589 A.D.

The tomb has also a mosque in connection with it, which, according to the inscription which it bears, is of Jahangir's time. But it appears much more modern and it seems that since then it has undergone considerable repairs. It has the following inscription:-

Text.

(1) بدور شاه نورالدين جهانگير   که دست اوست در بخشش چو دريا
(2) کريم الطبع زائر نعمت الله   که او رسم مروت کرد برپا
(3) به پيش روضهٔ قطب زمانه   کمال الحق نظام دين و دنيا
(4) عجائب مسجد فرمود عالي   که با بيت المقدس هست همتا
(5) چسان گويم صفات مسجد او   که بيرونست اوصافش ز احصا
(6) طلب کردم ز هاتف سال تعمير   ندا آمد که بيت حق تعالى
١٠٣١ هجري

Translation.

(1) In the reign of the king, Nuru-d-din Jahangir, whose hand in generosity is like an ocean:

(2) The noble-minded visitor, Ni'matu-l-lah, who has established the custom of generosity:

(3) In front of the tomb of the axis of the world, the perfection of truth, and the administrator of religion and the world:

(4) Built this wonderful and grand mosque, which is a match to the holy mosque at Jerusalem.

(5) How can I describe the beauties of his (Ni'matu-l-lah's) mosque, for its qualities are beyond enumeration.

(6) I inquired of the divine inspirer about the date of the building, a voice came, "The house of the most high God."—1031 A.H. = 1622 A.D.

(5) K̲HAN SARWAR.

Sarwar in Persian means a tank, *K̲han Sarwar* therefore means a tank built by the *K̲han*. The K̲han referred to here is S̲hah Quli K̲han, the governor of Narnaul. The building is a fine specimen of the species of architectural display which arose on account of the great fondness of Indians for water. K̲han Sarwar is a pleasure house built in the middle of a tank. The central building is reached by a causeway about 60 yards long. It consists of one hall only, which is surrounded by a gallery. The building is decorated by cut-plaster work and painting. On the roof there are five kiosks, four at the angles, and the fifth, bigger than the others, at the centre. The building is not in a dilapidated condition, but it needs repairs. Grass and vegetation, which are tearing it, should be removed; plaster has peeled off in many places and should be repaired, and the doors which are filled up by rubble should be opened. The building has some inscriptions, which are as follows:—

The inscription over the north arch—

Text.

(1) این قصرِ دلپذیر که رشک ارم بود
آب و هواے اوست چو فردوس دلکشا
(2) در عهد شاه اکبر غازي بنا شده
شاهے که برده بر سر شاهان دهر پا
(3) چون کرده است شاه قلي خان بناے آن
یارب چو قصر عرش برین ساز دیر پا
(4) گفت از برای سال بنا عقل دوربین
در سال نهصد نو و نه شد این بنا

Translation.

(1) This pleasant building which is the envy of *Iram*,[1] its water and air are refreshing like Paradise.

(2) It was built in the reign of Akbar, the victorious, the

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[1] *Iram*, the celebrated but fabulous gardens, said to have been anciently made in Arabia Felix by a king named Shaddad bin 'Ad or Iram bin Omad.

king who has placed his foot on the heads of the kings of the world.

(3) As Shah Quli Khan has laid its foundation, O God! make it durable like the palace of the highest heaven.

(4) The far-sighted Wisdom, for the date of its foundation, said, " This was built in the year 999 A.H."—999A.H. = 1591 A.D.

The inscription in the north vestibule—

Text.

(1) جم اقتدار شاه قلي خان وقار ملک
آن کور بود گوۓ شجاعت ز همگنان
(2) دریا نوال و کوه وقار و بلند قدر
رستم نشان و حاتم طائي این زمان
(3) بادا مدام ساغر عشرت بکام او
در روز رزم ناصر و در بزم کامران
(4) حوضے بنا نمود که ثانئے کوثر است
قصرے چو گلستان ارم درمیان آن
(5) آب حیات مے دهد از آب این خبر
لطف و هواے خلد نشان از هواے آن
(6) یارب ز حادثات زمانش نگاه دار
تا در نشاط و عیش نشیند درین مکان
(7) کردم سوال سال تمامي ز راه عقل
آمد مکان فیض جوانم بگوش جان
۱۰۰۱ هجري

Translation.

(1) Jamshaid in dignity, Shah Quli Khan, the honour of the country, he who has carried away the ball of valour from his rivals :

(2) Generous like the ocean, grave like the mountain, of exalted rank ; a second Rustam and the Hatim Tai of this time :

(3) May the wine of joy be ever in his palate, may he be victorious in the day of battle and prosperous in the day of entertainment.

(4) He has built a tank which is a second *Kausar*, and a palace like the garden of *Iram* in the middle of it.

(5) The water of immortality gives an idea of its water, and the pleasant air of Paradise is a specimen of its air.

(6) O God! keep it safe from the vicissitudes of time, so that he may sit in joy and exultation in this house.

(7) I inquired of Wisdom about the date of its completion; the reply, "the house of Grace," came to the ear of my soul. 1001 A.H. = 1593 A.D.

(6) THE TOMB OF SHAH QULI KHAN.

This building is said to have been originally situated in the midst of an extensive garden, which was enclosed by a high wall. The founder, during his lifetime, used it as a place of recreation and feasting, but after his death it became the solemn resting-place of his mortal remains. The tomb consists of an octagonal building crowned by a dome. It is made entirely of black and yellow marble, relieved by panels of red sand-stone. The building is in unusually good condition and requires no repairs. The land, originally occupied by gardens, is now cultivated by farmers, and yields good crops, as the soil is very fertile. We do not find now any trace of the enclosure to this garden, except a ruined wall and a dilapidated gateway towards the west. The tomb has the following inscriptions:—

The inscription over the south doorway—

Text.

(1) ندیدهٔ دیدهٔ گردون مثالش   بزیبائی چو بے مثل است و همتا
(2) بود آئینه سان سقفش مصقل   برونش چون درون باشد مصفا
(3) بدل گفتم که یارب سال تاریخ   چه باشد این بنـــاے دلکشارا
(4) خرد ناگه پئے تاریخ اتمام   بگفتـــا گنبد سنگیـــن و زیبا

۹۸۲ هجري

Translation.

(1) The eye of the sky has not seen its match, for in elegance it is unique and single.

(2) Its roof is polished like a mirror, and its exterior is transparent like its interior.

(3) I said in my mind, "O God! what would be the chronogram of this pleasant building."

(4) Wisdom suddenly, for the date of its completion, said, "The strong and elegant dome."—982 A.H. = 1564 A.D.

The inscription over the north arch—

Text.

(1) حضرت شاهٔ قلي خان نواب ، کرد این مقبرة را چون بنا
(2) خازن روضهٔ جنت گوبا   درے از خلد درین بقعه کشاد
(3) هرکه این گنبد عالي را دید   گفت بر حضرت خان رحمت باد
(4) * * * * * * * * * * * * * * * *

Translation.

(1) The exalted Nawab, S̲h̲ah Quli K̲h̲an, when he founded this tomb:

(2) The guardian of Paradise as it were opened a door from heaven to this place.

(3) Whoever saw this high dome said, "May mercy be upon the K̲h̲ān."

(4) * * * * * * * * * * * * * * * *

At a small distance from the tomb of S̲h̲ah Quli K̲h̲an to the N.E. of it, is situated the tomb of his brother Islam Quli K̲h̲an. It is a brick building and possesses no architectural beauty.

81. Some Folk-Tales from *Ḥaẓramaut.*

By Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners, Calcutta;* and Mr. R. F. Azoo, *Arabic Instructor, Board of Examiners, Calcutta.*

[A first series of these stories was published in the *Journal and Proceedings* of the Society, Vol. II, No. 9, of 1906. In an introductory note, the origin of these stories and some peculiarities of the grammar and idiom of the *Ḥaẓramī* dialect, in which they are written, were touched upon.]

I.

Story of the Unscrupulous Liar.[1]

There was once an Arab dwelling in a village, who was a nuisance to his neighbours, tricking them every day by a lie. On the day our story opens he came and stood at the foot of the mountain opposite to the pass[2] and cried out, "Flesh, flesh." (Now it is an Arab custom that when a camel breaks down, he that first sees it cries out "Flesh"; the people then collect and the owner of the camel distributes its flesh free and without price). The people heard the cry of the liar, not knowing that it was he. So they came out to the cry, but the crier returned to the village, and arrived at the village and found it empty. He then took up his basket saying to himself, "Perhaps it's true."[3] So he went out and followed the crowd, thus causing needless trouble to himself and others. It has now become an Arab proverb, "He cries 'Flesh,' and he says 'Perhaps it's true'"; meaning that a man puts people on a false scent about something to be gained and then says, "Perhaps they really are getting something."

II.

The Story of the Bedouin Thieves and the Poor Villagers.

There was a village of *Ḥaẓramaut* peopled by harmless[4] people, and there were in the neighbourhood Bedouins that used to harass their village. Now, on the particular night of our story,[5] two of them came to the house of a certain man who was sleeping with his wife. The couple became aware of the presence of the thieves. The man shook up his wife and said, "Thieves on the roof." Said his wife, "No, they are not thieves. Were they thieves, they wouldn't have come to the east part of the house, when our valuables are in the south." Now, there was in the south, a wall so delapidated that were anyone to cross it, it would fall. A thief overheard what the woman said and called to his brother, "The woman says so-and-so. Let us go to the south of the house." He replied, "Come on." They went to the south of the house and the wall came before them. There was no other way except across it, so they got on it. Now, there was a well underneath. The wall fell with them, and they dropped into the well. The man heard the fall and said to the woman, "What is this?" She said, "Right; those were thieves that you perceived. They heard me say that our valuables were in the southern portion of the house. Now my sole idea in saying this was to make them go to the south of the house, as I knew they had no other way but over the wall." In the morning, the man looked down the well and saw the thieves. He said to them, "Who are these in the well?" They said, "We; men of such and such a tribe." He said, "What brought you here?" They said, "We came to rob your house, but fate decreed otherwise. Now, take us out of the well." He said, "No, no; die where you are." He went and called the elders of the village to consult with them. They came, and he said to them, "Such and such is the case. What do *you* say?" They said, "Cast stones at them till they die; and when dead, take them out and bury them." As agreed upon, they stoned them to death and then buried them, only a few persons being privy to the matter. The friends of the thieves waited for two months, but the thieves did not make their appearance; so their friends set out to make enquiries about them. They came to the village and asked about them. The villagers said, "We have never seen them." The friends were about to leave, when a bitch of an old woman said to them, "What has brought you here, O people of such and such a tribe." They said, "We have come to enquire about So-and-so and So-and-so, who have been absent for the last two months and have not yet made their appearance." She said, "May the living one save you! So-and-so and So-and-so were killed by the people of this village and buried in such and such a place; but do not say I said so" "All right," said they. They then went to the people of the village and addressed them saying, "You have killed them and buried them in such and such a place. What have you to say to this?" The villagers said, "We will consult together and then give you an answer." The people of the village consulted together, and agreed to confess the deed. So they confessed saying, "We killed them; it is now for you to decide; we will agree to your terms." The Bedouins said, "We want the price of blood customary amongst genuine Arabs." They said, "All right"; and they paid the blood money. When I left, the Bedouins were still in the village.

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[1] *Zindīq.*

[2] *Shi'b.*

[3] A similar story is told of *Ash'ab*, who was noted for his greediness; vide *Kitāb^{u}l-Aghānī.*

[4] *Masākīn*, the origin of the French *mesquin.*

[5] ذات الليلة *Ẕāka 'l-laylah.*

III.

THE BLIND THIEF.

(*A true story.*)

There was once a man who was in the habit of stealing the ripe fruit from off the date-palms. At night he used to take his rope, and having by day studied the trees and marked those that bore a fine crop, he would climb them and pluck as much as he wanted. Fate decreed that he should become blind; but still he did not give up his old habit. The people cried out and complained against him, and said to one another, "What can we do to So-and-so?" One of them said, "I will show you what to do." They said, "What can *you* do? God has already blinded him for his evil deeds." He replied, "Right; in the afternoon he is always seen sitting close to the water-wheel. When he takes his seat there, sit around him and wait for my coming." They accordingly went, and they all began to converse together, and turned their conversation on the date-crop. One said, "The date palm of So-and-so has very fine dates." The man who came last said, "Ah, but not like the dates I have seen on the palm of So-and-so!" The blind man was listening. Now, this tree was withered and had no longer any leaves. Having sat there for a while, each went his way. The blind man waited till night; then took his rope, and went to the palm tree. Having gone there, he tied his rope round it and went up, feeling all the time for the foliage and saying to himself, "Now I'll come to them, now I will come to them," until at last his rope went up into the air over the bare top of the tree, and he fell to the ground and killed himself. In the morning he was found dead under the date tree, and was taken away and buried.

But, as the proverb has it, 'No star sets but another yet brighter appears'; when I left these people, another thief had risen who stole both by day and by night.

IV.

THE WOMAN WHO HAD A LOVER.

A certain man met a woman in the market-place; *he* was of mean appearance, while *she* was very beautiful. He accosted her and said, "O So-and-so, I am in love with thee, and want thee to give me a meeting." She said, "What art thou saying? Hast thou ever heard or known of an ass riding a mare?" He said, "Am I an ass?" She said, "To me thou art an ass; to others, may be not." He said to her, "Very well," and went his way. Two months later, a marriage took place in the town where the woman dwelt. The man went to the marriage feast. He arrived at the town. Now this woman had a lover. He enquired after the woman and they said to him, "She is at home, and So-and-so is with her." He came to her door, and found it shut. He heard talking inside

He passed the whole night saying, "Do this," and "Do that," not allowing her to close her eyes in sleep. In the morning her father came. As soon as he entered, she began to cry. He said to her, "Why dost thou cry?" She related to him all that her cousin had done. Her father said to her, "This is the son of So-and-so, a boy of blood and spirit! *He* is not a weaver's son!" When I left them, the youth and his wife were living together happily.

VIII.

STORY OF *Yaḥyā 'Umar*, THE GUITAR-PLAYER.

(*A true story.*)

Yaḥyā 'Umar was a native of *Ṣan'ā*. He left *Ṣan'ā* and came to India. He arrived at Baroda, and there married. After living with his wife for only fifteen days he divorced her, and took himself off to *Hindūstān*.[1] From *Hindūstān* he went to Calcutta; and from Calcutta to Madras; and from there, after an absence of sixteen years, he went back to Baroda. He went to live with the Arab colony which is at Baroda. After some days the Arabs said to him, "We think that thou oughtest to marry here." "Very well," said he. Now the woman whom he had first married had conceived by him, and had given birth to a daughter. When the girl was seven years old her mother died, and she was brought up by her maternal uncles, who knew not who her father was. On the eve of his departure, *Yaḥyā 'Umar* had given his wife a silver ring on which was engraved his name "*Yaḥyā 'Umar.*" This ring was given to the girl the day her mother died. The Arabs said to *Yaḥyā 'Umar*, "There is a young girl, an orphan, and the daughter of an Arab, and she has no relation to bother you; you had better take her and save her from harm." He said "Certainly." So they went to the girl's uncles, who consented, and the marriage was decided on. The night of the marriage, *Yaḥyā 'Umar* hired a house that had an outer hall. At night he went in to the girl. Now it was a habit of his not to sleep until he had played and sang, and in the verses he sang he always repeated his name *Yaḥyā 'Umar.*[2] So, before approaching the girl, he took up his guitar, and the girl heard the words *Yaḥyā 'Umar.* When he had finished his tune, he approached the girl. She said to him, "Keep away from me." He said to her, "Why?" She asked him, "Wert thou ever in this town before?" He said, "Yes." "And didst thou marry here?" He said, "Yes, I did marry." Thereupon she took off the ring from her hand and showed it to him. He saw the ring and said to her, "What about this ring? How didst thou get it? This is the ring I gave the woman I first married." The girl said, "She was my mother and thou art my father." When he heard this, he went out and slept alone. The next day, he left Baroda and journeyed to Arabia, where he married his daughter to a man of his own tribe—but I was not present at the marriage feast.

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[1] i.e., Delhi, Agra, etc.

[2] Persian and Indian poets always mention their *takhalluṣ* or 'nom de plume,' but not so Arab poets.

IX.

Story of the Negro Slave.

(*Illustrating the stupidity of negroes.*)

There was once an Arab who owned a negro slave. One day he said to the negro, "Go and stay in the watch-tower to-night." The negro delayed in going, and only set out after sunset. When he reached half-way, he came upon an irrigation water-wheel. As he entered it,[1] an owl hooted. The negro stopped and cried out, "I am the slave of *Bā-Ngeṭah !*[2] Do you wish us good or evil ?" At that moment, an Arab who was passing by heard the words of the negro. He stopped and said to himself, "Has this negro met with enemies here or what is it ?" Then he heard the cry of the owl, and saw that whenever it cried, the negro cried, "The slave of *Bā-Ngeṭah.* Friend or foe ?" The negro passed the whole night, standing where he was. In the morning, the owl flew away; and the negro, on seeing it, began to abuse it, and said, "God curse thy father and thy grandfather! It was only an owl, and I took it for enemies." The negro then went to the watch-tower, while the Arab went to his village, which was also that of the negro. Having sat in the watch-tower for some time, the negro returned to the village. The next evening his master again ordered him to go to the watch-tower. He set out early in the afternoon, and passed the night in the tower. In the morning a party of men came down the pass. The negro shouted at them saying, "Stop where you are!" and he forthwith fired two shots. One of the men said to him, "Why, how is this, O *Mubārak*! We are of such and such a tribe, and we are simple wayfarers." The negro said, "Who is it ?" The man said, "I, So-and-so." The negro said, "My master So-and-so ?" The other said, "Yes, O father of the piccanniny." Then the negro said, "Pass on." When the Arab who had passed the night listening to the negro and the owl, came up, he addressed the negro saying, "Why all this, O Mubārak, when the night before last thou didst pass the whole time in the water-wheel together with the owl ?" The negro said, "And where wert thou ?" He said, "I was in my house." He said, "Who told you then ?" "The devil told me," said he. The negro thereupon lighted his matchlock, and firing at the Arab, hit him. The villagers came and found the Arab still alive. Then the master of the slave went to the Arab and said, "What is this, O So-and-so ?" He answered, "As you see." He said, "But what didst thou say to the negro ?" He answered, "I said nothing," and he related to him the affair as it happened, and how the negro had passed the night in the company of the owl. The wounded man died, and was carried away and buried; while *Bā-Nyeṭah* got up and journeyed with the negro to the port of *Makallah*[1] and sold him to *Al-G'ayṭī.*[2] I was there when *Bā-Ngeṭah* took the slave away, but was not present when he returned, and so I cannot tell you for how much he sold him.

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[1] Many of these wells have roofs to protect the bullocks.

[2] *Ba* for *Abū* and *Ngeṭah* for *Nuqayṭah*; lit., the "father of the mole; he with the mole."

X.

STORY OF THE MONKEY.

(*A true story.*)

There was once a native of Yaman, who brought up a monkey and trained it to the songs of negroes and to the tune of the guitar; and whatever he ordered it to do, it would do. One day, the man said to himself, "I'll travel." So he journeyed from country to country, till he came to Java. There he amused the people with the pranks of the monkey. One day he gave a performance under the governor's house; and at night went to the house of two chums and slept there. These men, becoming aware of the money he had, rose up in the middle of the night and killed him; and, having dug a grave in the house, buried him. In the morning they let the monkey loose in the market place. The monkey then ran through the market crying out, till it arrived at the governor's house. The governor heard the cries of the monkey and said, "What's that?" They said, "It is a monkey crying: we do not know whose it is; but probably it belongs to the stranger who gave a peformance here yesterday." He said, "See what is the matter with the monkey." Then the police came, and the governor ordered them, saying, "Go with this monkey." So the monkey went before and they followed, till it brought them to the house where its master was buried. It went in and they followed it. It went up to the spot where the man was buried, and began to dig. The police pushed it aside, and dug, and found the corpse. They seized the inmates of the house and took them to the governor. The latter questioned them and they confessed; "For the sake of his money we killed him." The governor sentenced them to sixteen years' imprisonment. He then took the monkey and sent it to Aden, and from Aden it was taken to Yaman, and I was there when it arrived.

XI.

THE HAUNTED MOUNTAIN PASS.

It is a custom of the *Ḥaẓārim*[3] to foregather in the market places in the afternoon, and also after nightfall. One night three persons were sitting together talking. One of them said, "Anyone who goes to such and such a pass, as far as the rock-pool, and comes back—to him I will give four dollars." One of his hearers said, "I'll do it." The other returned, "But on one condition. I'll give you a sheep: you must take this sheep to the pool, kill it there and skin it; and having killed and skinned it, you must roast it; and afterwards bring it back whole, no portion of it being missing. If you bring it back whole—well, it is only a matter of four dollars to me. I'll pay them to you gladly and ungrudgingly. But if you go and return with the meat deficient, or if any mishap befall you, mark my words, I have nothing to do with it, nor will I be held responsible in any way." The man said, "If anything happens to me, you are not responsible: this I say before So-and-so and So-and-so." "Very well," said the other, "I will now go and fetch you a ram as agreed upon." "Go and bring it," returned the other. So he went and brought the ram; and the man took the ram from him and led it off. When he reached the pool, he killed the ram and skinned it; and having lighted a fire, he began roasting it. When he had finished, there appeared before him three females of the Jinn, a mother and two daughters, who said to him, "Divide it." When they said, "Divide," he was filled with fear and died on the spot.

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[1] *Makallah* in Arabia; a port of *Ḥaẓramaut.*

[2] *Al-G'ayṭī* for *Al-Qu'ayṭī*, the name of a chief.

[3] Natives of *Ḥaẓramaut.*

The man with whom he had made the wager and his other friend were waiting for his return, and kept on saying to themselves, "Now he will return, now he will return," until morning. Getting no news of him, they wended their way to the pass to see what had happened, and there they found him dead; so they bore him away and buried him. As to the meat, they found not a trace of it. The next night, another man came and said, "O So-and-so, you laid a wager with So-and-so and he died in such and such a pass. Now, *I* will lay a wager with you." The other replied, "Look here! you will meet with just the same fate as So-and-so." "It is no affair of yours," returned he. "Very well," said the other, "but on the same conditions that were between So-and-so and me, and these men present are our witnesses." "Right," replied he. So the man went and brought a ram, and the other took the ram from him and led it off. As soon as he had reached the pool he was seized with fright and returned at once, bringing back the ram alive. He came to where the company was sitting, and said to the owner of the ram, "Take your ram, and here are four dollars as agreed upon." So the man took the four dollars, and also the ram. The third night, yet another man came and said, "O So-and-so, you laid a wager with So-and-so and So-and-so; the first died and the second brought back the ram alive. Now *I'll* bet with you; either you will win from me four dollars, or I'll win four dollars from you." The other replied, "Look here; So-and-so died, and So-and-so went half way and came back with the ram alive; now I think that you, too, will either die or bring back the ram alive." The man said, "If I bring back the ram alive, you shall have four dollars; and if I die, you are not responsible; this in the presence of So-and-so and So-and-so." "Very well," said the other. So he went and brought a ram and gave it to him. The other went off leading the ram. He arrived at the pool, killed the ram, and skinned it. Then he gathered some wood, lighted a fire, and roasted the meat. When he had finished roasting it, the three females of the Jinn, already mentioned, came and said to him, "Divide!" He said, "All right, wait a bit." He then took the roasted meat and put it into the skin. The old woman came and caught hold of the skin; but he, taking up a firebrand, struck her with it in the face, and then ran off, taking the meat with him. The two girls started after him, and one of them came up so close behind him that she was able to sprinkle him with some milk from her breast. He felt her do this; so when she turned back, he, too, turned; and hanging the skin on a tree, he followed her at a distance. When the daughter reached her mother and sister, the mother said, "Has he escaped both of you?" She who had sprinkled the man with her milk said, "No, he did not escape us; I overtook him and sprinkled him with the milk. He cannot escape; he must die of it—unless he cauterizes every joint with a needle, only then will no harm befall him. But if he does not cauterize the milk, he dies." The man heard the words of the daughter and turned back. He went to the meat and took it. He then came to where the company had been seated and found them still there. He produced the skin, handed it to the man with whom he had laid the wager, and said to him, "Take out the meat and examine it to see whether any portion is wanting, or whether it is whole and entire." The other took the meat out of the skin, and found it whole; so he gave him four dollars and half the meat. The man then went to his house, lighted a fire, threw a needle into the fire, and cauterized every joint. Thus he met with no injury—and this is the story of the Haunted Pass.

XII.

STORY OF *Abū Nuʿās* AND HIS BROTHER.

Abū Nuʿās had a dissolute brother, a gambler and a rake. One day he met with such bad luck in gambling that he found himself without even clothes on his back. He went to his brother, who said to him, "What state is this?" He said, "It is as you see." Then people reasoned with *Abū Nuʿās* and said, "You are a wealthy man and this brother of yours is poor. It is only right that you should give him, say a hundred dollars, wherewith to trade." *Abū Nuʿās* said, "My friends, this brother of mine is a dissolute person. Nothing stays with him; whatever he gets, he squanders." They said, "No, no; you must give him a hundred dollars." "All right," said he; and he gave him a hundred dollars. The brother left with the hundred dollars and journeyed till he came to a certain town. He found himself under the walls of a house, and looking up, caught a glimpse of a girl near the window. Now, there was a negress standing at the door, so he said to her, "Who is this in the house?" She said, "This is my mistress." He said to her, "Go and ask your mistress if she will take a hundred dollars to allow me to have a good look at her." The negress went in and informed her mistress. Her mistress said, "Bring in his hundred dollars." The negress went out and said to him, "Give me your hundred dollars and my mistress will look out from the window, and you can gaze at her till you are tired." He gave her the hundred dollars. She went up with the hundred dollars, and the girl looked out from the window above. He gazed at her till he was tired, and then went back to his brother. A few days after, his brother asked him, "What have you done with the hundred dollars?" He said, "Faith, a mere girl has robbed me of them." His brother said, "And how did she manage to do that?" He replied, "I saw that the girl was very pretty. When I first saw her I did not get a good look at her, so I asked her slave-girl, who was standing by the door, who the girl in the house was; and she said it was her mistress. I then said to the slave girl, 'Let your mistress take a hundred dollars and allow me to have a good look at her.'" His brother said to him, "Did you both look at her and possess her, or simply look at her?" He said, "No; nothing but a look." "Very well," said *Abū Nuʿās*, "get up and show me her house." The other answered, "All right, come along!" Then *Abū Nuʿās* rose and brought a ram, and went with his brother, leading the ram. When they arrived under the house where the girl lived, the brother said, "In this house." *Abū Nuʿās* jumped forward and said to his brother, "Catch hold of the ram" So he caught hold of the ram; then *Abū Nuʿās* kept on saying in a loud voice under the house, "Hold it for me, hold it tight." The girl heard the cries and looked out. Then *Abū Nuʿās* said to his brother, "Have a good look for nothing now that rams are being slaughtered!" Having killed the ram, he skinned it, putting the flesh and bones aside. He then distributed the flesh, giving the slave-girl a large quantity. She took the meat to her mistress, who said to her, "From whence is this meat?" She said, "From the man who killed the ram." At night, *Abū Nuʿās* said to the negress, "I'll pass the night here, under the door." "All right," said the slave-girl. When the first watch of the night had passed, the street dogs came, attracted by the smell of the flesh. *Abū Nuʿās* threw a bone at them, and they all scrambled round him. He then shouted out. The negress looked out and said, "What is the matter with you?" He said, "The dogs are eating me up." Then the girl said, "Bring him inside the porch." So the negress came and opened the porch for him and closed the door. After a while, the cats came, also attracted by the smell of the flesh. He threw a bone to them, and they scrambled for it. He cried out, and the girl said to her negress, "Bring him up and let him stay outside the door." So she brought him up, and he remained outside the door. The cats followed and he threw them a bone, and they again scrambled for it, and he again cried out. The girl then said, "Bring him inside the room." So the negress brought him in and showed him a place near the girl's bedside. *Abū Nuʿās* lay down flat on his back, while the girl looked on.

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In the morning, her mother came and saw *Abū Nuʿās* sitting there. She said, "Who is this man?" Her daughter answered, "A stranger. He has got something so nice that once you have tasted it you will never give it up." The old woman cried out, "This is what produces children!" When *Abū Nuʿās* heard this he began to cry aloud, "My children, my children!" The old woman said, "Don't disgrace us." He said, "I wont listen; I want my children, my children." She said, "Be quiet; people will hear us." He said, "And what is that to me?" She said, "Take a hundred dollars and keep silent." He said, "No." "Two hundred." "No." "Three hundred." "No." "Four hundred." He agreed to four hundred. He took the four hundred and went away. Half he gave to his brother and half he took himself. His brother soon lost his two hundred in gambling, and came back to *Abū Nuʿās.* The latter said to him, "I gave you a hundred and you squandered it. I then gave you two hundred. Now if you were to ask me for a single farthing, I would not give it to you. You are not my brother, and I am not your brother." This is the story of *Abū Nuʿās* and his brother. When I left them *Abū Nāʿus* was a man of great wealth, while his brother went in need of his supper.

XIII.

STORY OF THE *Kurbī.*

There is a tribe by the name of *Kurb*, which had a blood-feud against the tribe of *Yām*; so three of them met together, and one of them who had been wronged said, "Let us make a raid upon the *Yām* tribe." One of the other two replied, "It won't do; their country is far off, and there is nothing on the road." He who had been wronged said, "Will you come along with me, or must I go alone?" The others said, "If you intend to go alone, we must, of course, join you. If we're killed, we're killed, and if we live, we live." So they agreed to make the journey, and set off, taking with them only one solitary camel. Two used to ride on the camel, while the third walked. When the man on foot was tired, one of the riders would dismount, and he who was walking would mount: the one who had dismounted would then walk till he got tired: then the third would dismount and the man on foot would again ride, and so on. They travelled on thus for about a month-and-a-half, when one night, towards the middle of the night, they reached the sea, without anyone being aware of the fact. The man who was walking stayed behind for a little, for a call of nature; but the other two proceeded on their way, and the camel entered the sea and they were all submerged and drowned. The one who was walking pursued his way after his friends, but when he reached the sea, he felt the water and so turned back. He sat under a tree till morning. When it was daylight he looked out and saw the sea before him. He searched for his friends, but they were nowhere to be seen. Then he walked along the shore of the sea for three days. In the afternoon of the third day, he came upon an encampment of Bedouins whose tents were of camel hair. He entered one of the tents, and there found a man and a woman. The man wished to kill him; but the woman stopped him, saying, "There is no need to kill him; he is but a stranger." At night they brought him some food. After he had supped, he said to them, "I wish to sleep." So they pointed out to him a place to sleep in, which happened to be on the path to the tent. Towards midnight the woman's real husband arrived, and seeing a strange man sleeping, roused him and said, "Who are you? Whence do you come?" He answered, "I am a poor man, coming from the East." The woman's husband then went in to his wife and saw the man with her. He drew out his sword and gave him a blow, which killed him. When he was dead, he dragged him to the door of the tent and left him there. He then went and brought a camel, put the dead man on the camel, and, making the stranger mount, too, bound him tightly, intending to cast both of them into the sea together. He started off, leading the camel by the nose, and they arrived at the sea-shore. Now, there was by the shore a *naws* tree,[1] and the man passed under it with the camel. The stranger saw the tree, and, while passing under it, he laid hold of a branch and let go the camel. The owner of the camel went along leading it till he reached the sea. He cut off the camel's gear with a knife and cast it into the sea, and returned, leading his camel, all the time thinking that the stranger was with the slain man. After some time, the stranger came down from the tree and said to himself, "Where shall I go now? By God, I will not go anywhere but to these Bedouins! It's either life or death." So he went to another tent and saw there an old man and an old woman. He greeted them and they returned the greeting. They said to him, "Of what country are you, and where are you going?" He said, "Faith, I am from the East, and I was going South; but I now want to return East." When it was morning, the old man said, "Do you happen to have any news of my son?" The stranger asked for a description of the son. They said, "He is a fair-complexioned man, tall of stature, and bearded." The man answered, "What will you give me if I give you news of your son?" The old man said, "I'll give you whatever you wish." He said, "I desire nothing but that you take me to my own country." "I pledge you my faith," said the old man. "This being so," said the stranger, "listen; the owner of *that* tent killed your son and threw him into the sea." The old man said, "Ha, is it so?" He said, "Yes." Thereupon the old man sent a summons to his friends. They came and he said to them, "So-and-so has killed my son." After consulting together they decided to kill the man who had killed the old man's son. So twelve from among them went to the man, and called to him to come out. As he came out to meet them, they killed him; two of them cut him down with their swords. The friends of the slain man then came and said, "Who killed So-and-so?" They said, "The men of such and such a family." The friends then said, "Up and at them." So they had an encounter, and twelve persons were killed. They then separated. After that the old man said to his companions, "This stranger brought me news about my son, how So-and-so had killed him; otherwise my son's blood would have gone unavenged. Now I have bound myself to convey him to his country, but I am old and want the strength to do so. What say you?" "Of course," they said, "the young ones will see to this; since you have bound yourself, they will convey him there." He said, "I have pledged my faith to do it." So they sent three men with him. They journeyed on till they pointed out to him the mountains of *Ḥaẓramaut.* When he had seen the mountains, they said, "This is *Ḥaẓramaut;* those are its mountains: now we must return." He said, "Very well, go back." So they turned back, while the *Kurbī* continued on his way to *Ḥaẓramaut.* Now, this is the story of the *Kurbī* and his companions.

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[1] Said to be a kind of low palm.

XIV.

ANOTHER STORY OF *Abu Nuʿās.*

Abū Nuʿās lived in Yaman.[1] Once he journeyed from Yaman to *Shām* with a hundred dollars, for the purpose of trading. On his arrival in *Shām*, he met with a certain man. The latter said to him, "Whence do you come, gentle sir?"[2] He said, "From Yaman." "And why did you come?" He said, "I came to trade." The other said, "But why trade? I will give you something to do: if you succeed in doing it, I will give you a hundred dollars; but if you fail to do it, I will take your hundred dollars." "Very well," said *Abū Nuʿās.* The Syrian said, "To-morrow morning." *Abū Nuʿās* said, "All right." Next day the Syrian rose and brought a team of oxen to *Abū Nuʿās*, without any ropes, and also a plough without ropes, and said to him, "Go with these oxen to my field: if you can work them without ropes, I will give you a hundred dollars; if you cannot, I will take from you the hundred dollars you have." *Abū Nuʿās* said, "All right." He then took the oxen and went to the field. Seizing a knife he cut a strip of skin from the nape of one ox up to its tail; then he went to the other ox and did to it as he had done to its fellow. He then took one of the strips and yoked the plough by means of it, and with the other strip he coupled the necks of the oxen. When he had ploughed a first, a second, and a third furrow, the oxen died. *Abū Nuʿās* then went to the owner of the oxen, who said to him, "Have you done it?" "Yes," said *Abū Nuʿās*. "And where are the oxen?" "The oxen are on the field plot." The owner went to the field and found the oxen dead. He returned and went up to *Abū Nuʿās* and abused him freely. Said *Abū Nuʿās*, "If you are angry, let me have the hundred dollars as agreed between us, and I'll depart." Said the other, "No, I'll give you another job" "All right," said *Abū Nuʿās*. Then the Syrian said to him, "Come up with me to my room, and I'll show you what to do." *Abū Nuʿās* went up with him. Now the owner of the oxen had a wife, who was then grinding some corn below. So he went down to his wife and said to her, "If *Abū Nuʿās* comes to you, and tells you to keep quiet, don't keep quiet." "All right," she said. He then went up to *Abū Nuʿās* and said to him, "Go down and silence that woman.[1] If she stops, I will give you the two hundred dollars." "Very well," said *Abū Nuʿās*. He went down and found the woman singing. He said to her, "Keep quiet." She said, "I won't." As she wouldn't listen, he went up to her, took some flour in his hand and stuffed it into her mouth and nostrils. The woman died. He then went up to the woman's husband and found him sitting there. The latter said to him, "Have you silenced her?" He said, "Yes." The husband went down and found his wife dead. He came back to *Abū Nuʿās* and abused him even more than before. *Abū Nuʿās* said, "Don't abuse me; if you are angry, give me my money and I'll go." The Syrian said, "No, I am not angry; I'll give you another job." *Abū Nuʿās* said, "Very well." The other said, "Stay here until I show you what to do." At night the rain began to fall. Then the Syrian roused *Abū Nuʿās* and said to him, "Go down and put the heads of the sheep[2] under cover." "All right," said *Abū Nuʿās*. He then went down to where the sheep were, cut off their heads, brought the heads and put them in the pen, and then went up to the owner. The latter said to him, "Well, did you put the heads of sheep under shelter?" "Yes," he said. The owner went down to see for himself. He found all the sheep slaughtered. He went back to *Abū Nuʿās* and abused him roundly. Said *Abū Nuʿās*, "If you are angry, let me have my money and get rid of me." The Syrian said, "And could I have greater cause for anger?" So he brought out the keys of his closet, opened it, and gave *Abū Nuʿās* four hundred dollars. *Abū Nuʿās* took them and went back to Yaman.

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[1] *Abū Nuʿās*, the famous courtier of *Hārūnu 'r-Rashīd*, did not live in *Yaman*.

[2] *Lit.*, "Oh thou of noble face."

XV.

STORY OF THE LADDER, THE FLUTE AND THE CAT.

A certain man died, leaving three sons. His only property consisted of a ladder, a flute and a cat. The sons divided this property amongst them, and the one who got the ladder left the town and wandered from place to place, seeking his livelihood. He came to a certain town, and was there met by a woman, who said to him, "What is this you have with you?" He said, "An instrument for straightening the crooked." She said, "I wish you would straighten me; for my husband whenever he opens his mouth says to me. "You are crooked from heaven to earth."[1] The man said, "Very well; what will you give me?" She said, "Fifty dollars." "All right," said he. "I'll straighten you." He went to the woman, made her lie down on the ladder, and bound her hands, feet, and neck to it, and then went his way. The woman's husband came home He said to her, "What is this?" She said, "Some one has arrived in the town who straightens the crooked; now whenever you speak to me you say, 'You are crooked from heaven to earth'; so I let him straighten me." The husband rose and loosened the fastenings. He then beat her with a club, divorced her, and sent her back to her people. As to the owner of the cat, when his brother returned, he said, "I will now go and try to earn a living." He tied his cat with a string and went off, travelling from place to place, till one evening he arrived in a certain town. Night overtook him, so he came to a shopkeeper and said to him, "Let me sleep in your shop, and early to-morrow morning I'll go off." The owner of the shop said, "Do not sleep here; come with me into the house and sleep there." He said, "Very well," and went with him. Now the woman of the house had, with her, her lover; so she hid him behind some mats. When the two arrived, the owner of the house brought the stranger some food. When he had supped, he said to him, "Sleep." "All right," said he, "I'll sleep." When it was morning the master of the house went to his shop, the owner of the cat remaining in the house. He caught sight of the feet of the lover underneath the matting. He drew the cat near him and pinched it. The cat cried out. He said to the cat, "Keep quiet, do not expose us before everybody." The woman, hearing him, said, "What is the matter with you that you are talking to the cat?" He said, "The cat is saying something which only God and I know of." She asked, "What is it saying?" He said, "No matter." She said, "I ask you by God to tell me." He said, "It says there is a man underneath the matting." The woman said, "Preserve my honour; do not expose me before people." He said, "I shall go and tell your husband." The woman said, "Don't tell my husband; I'll give you as much as you like." He said, "What will you give me?" So they began to haggle, and at last agreed upon three hundred dollars. So he took three hundred dollars from her, and went back to his country and met his brothers. With the fifty dollars of the owner of the ladder, and with these three hundred dollars, they opened a shop and placed the owner of the flute in it, while they themselves went and bought merchandise.

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[1] She would naturally be singing while grinding the corn.

[2] "The heads of the sheep" is an Arabic idiom for "the sheep."

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[1] *Lit.*, all the distance from heaven to earth, i.e., you could not be more crooked than you are.

I. حكاية الزنديق[1]

كان واحد عربي في بلد ، مؤذي اهله ، كل يوم يجيب لهم كدره . ذاك اليوم ، وصل تحت الجبل مقابل الشعب ،[2] صاح : لحيماه لحيماه[3] ! من عادات العرب ، اذا شي بعير انكسر[4] ، الذي يشوفه الاول يصيح لحيماه ! تندر[5] الناس ، ويقسم اللحم مولى البعير ،[6] سبيل من غير قيمه . سمعوا الصوت ، صوت الزنديق ، ولا هم دارين انه هو . خرجوا علصوت[7] ، وهو راح الى البلد . وصل الى البلد ، حصل البلد خالية . من بعد ، شل[8] زنبيله وقال : اخاف ذا صدق ؛ وخرج قفا الناس . وعذب الناس ، وعذب نفسه . ومن امثال العرب : قال لحيماه ، قال اخاف ذا صدق . يعني كما من خبر شي كذب وقال اخاف الناس يحصلوه .

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II. حكاية البدو السرق[9] واهل البلد المساكين[10]

كانت بلد في حضرموت ، اهلها مساكين . وكانوا بدو يسرقون البلدة ، ذاك الليلة ، جو اثنين الى دار واحد ، وهو نيم[11] هو وحرمته . حسوا

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[1] زنديق, "unbeliever, hypocrite": colloq., "an unscrupulous, impious man."

[2] شعب, "pass", also, "valley."

[3] "To the meat!" لحيمة is dim. of لحمة, "a piece of meat."

[4] انكسر, "to be disabled; to break its leg (camel, etc.)."

[5] ندر, colloq., "to go; to come."

[6] سبيل, "free; gratis"

[7] علصوت, for على الصوت.

[8] شل = شال, colloq., "to take up; lift."

[9] Pl. of سارق.

[10] Pl of مسكين, "humble; harmless; helpless"; origin of the Fr. "*mesquin*"

[11] For نائم.

بالسرق . تور الحرمة الرجال ، وقال لها : سرق فى الريم [1] قالت الحرمة :
لا ، ما هم سرق ، لو كانوا سرق ما هم في شرقي الدار والمال في قبليها . واذا
عسيف [2] في قبلي الدار رام [3] ، لو عبر الادمي عليه يسقط . سمع السارق
كلام الحرمة طرب [4] من اخوه ، وقال الحرمة تقول على كدا وكدا ، بغينا [5]
قبلي الدار . قال له قم . مشوا الى قبلي الدار ، التقاهم [6] العسيف ، ما لهم
طريق الا عليه . طلعوا علعسيف ، واذا بير تحت العسيف ، سقط بهم العسيف ،
حطوا في البير . سمع الرجل العسيف يوم سقط . قال للحرمة : ايش هذا ؟
قالت صحيح انهم سرق الذي وحيتم [7] ، وسمعوا كلامنا يوم قلت المال
في قبلي البيت ، وانا ما تكلمت بهذا الكلام الا وانفاهم يروحون الى قبلي
البيت ، لانه دارية ان ما لهم طريق الا علعسيف . خذ [8] الى الصبح ، الرجل
اشرف على البير ، [9] لو السرق في البير . كلمهم : من ذولا [10] فى البير ؟ قالوا : احنا
آل فلان . ايش جابكم ؟ قالوا : جينا بانسرق بيتك ، وكذب [11] المكذوب بهذا الامر ،
والان طلعنا من البير قال : لا لا ، موتوا هوهنا . راح طرب على اهل البلد
العقال ليستشيرهم ، حضروا . قال لهم على كدا وكذا من الامر ، وما تقولون ؟
قالوا : ارموهم بالحجر [12] الما يموتون ، واذا ماتوا ، طلعوهم وادفنوهم . رموهم
حسب ما اجتمع شورهم الما ماتوا ، و دفنوهم ، ولا حد [13] درى الا قلة ناس .
خذوا اصحابهم مدة شهرين ، ما ظهروا ، راحوا يسالون عنهم جو الى البلد هذا .
سالوا ، قالوا لهم : ما شفنا احد . قد هم با يروحون ، واذا بعجوز كلبة [14]

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[1] ريم, "roof of a house." [2] عَسِيْف, "wall." [3] رَامّ, "old."

[4] طَرَّب, (with من of the pers.), "to call."

[5] بغينا, "let us go, repair to." [6] التقاهم, "came in their way."

[7] وحى, "to perceive; notice; hear."

[8] خذ for أخذ, "to wait."

[9] لو = وإذا. [10] ذولا = هؤلاء . [11] كُذُبْ for كَذِبَ .

[12] الما, prob. compound of الى and ما = حتى.

[13] حد for أحد .

[14] "A bitch of an old woman": a term of abuse.

قالت : ايش جابكم يا آل فلان ؟ قالوا : جينا نسال عن فلان وفلان ، لهم من نو شهرين غابوا ، ولا عاد طلعوا . قالت : حياكم الحي ، فلان وفلان قتلوهم اهل البلد ودفنوهم في موضع الفلاني ، ولكن لا تشلوا اسمي عندهم قالوا لها طيب . راحوا هاذولا ، وكلموا اهل البلد بقولة : قتلتوهم ودفنتوهم في موضع الفلاني ، وما تقولون ؟ قالوا : باننتظر ، ونرد لكم جواب ، انتظروا اهل البلد ، واجتمع شورهم على الاقرار . قروا لهم بقولة : قتلناهم لحنه [1] ، والحكم بروسكم ، الذي تبغونه لبغاه [2] . قالوا البدو : لبغي الدية الذي هي صارحة بين العرب البين [3]. قالوا لهم طيب . سلموا الدية . وانا رحت من عندهم و البدو عادهم فى البلدة .

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III. حكاية الاعمى السارق (وهي حكاية صحيحة)

كان واحد مبتلي بسرقة النخل ، الا [4] الليل ، مثل مرقده ، ويشوف في ايات نخله خريف [5] ناجع ، سوى له واندر [6] ذي يكفيه . جرى عليه الامر بالعمى ، و كان على دلا ، [7] ما فكه . صاحت الناس منه ، قالوا : و ما الطب في فلان ؟ قال واحد : انا اوريكم فيه . قالوا : ايش تسوي فيه ؟ قد ربك اعماه من اعماله الخبيثة . قال لهم : طيب ، الا العصر تشوفوه يقعد على سوم [8] الساقية ، [9] اذا قعد ، التفوا عنده ، واقعدوا الما اجي . راحوا ، وجا الانسان هذا ، وسبروا [10] في مناقلة الحديث ، وجابوا ذكر في الخريف ، بنخلة الفلاني

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[1] لحنه for نحن, the ن of the 1st pers. pl. changing to ل.

[2] لبغاه for نبغاه, see preceding note.

[3] البيّن for البائن, "true; genuine."

[4] الا for اذا (= اذا جاء الليل, "at night").

[5] خريف, "crop; fruit, particularly 'the date.'"

[6] اندّر, for ندر, "to take away."

[7] دلا = ذلك

[8] سوّم, "edge."

[9] ساقية, "waterwheel."

[10] سبّر, "to begin."

فيها خريف طيب. قال هذا : لا، اما خريف شفته في نخلة الفلاني ! والاعمي يتسمع، و النخلة يابسة، ما عاد لها سعف. قعدوا ساعة، وكلا راح. خذ الاعمى الى الليل، شل مرقده وسرى للنخلة، وصل الى عندها، عصب مرقده بها، طلع فيها يبغى السعف، ذي العين يجي، الا ذي العين، الما خطا المرقد الى الجو، سقط الاعمى، صبح ميت تحت النخلة، جو الصبح الداس، حصلوه ميت، شلوه ودفنوه. ولكن كما في المثل : ما يغيب نجم الا ويطلع زاهر، وانا رحت من عندهم وطلع سارق في البلدة يسرق بالنهار والليل.

IV. حكاية الحرمة والرجال

رجل اتفق بامرأة في السوق، والرجل شوفته شويفه، [1] والحرمة جميلة جم.[2] قال : يا فلانه، عشقت عليش، [3] ولبغي الاتفاق. قالت له : اش تقول ؟ تدري وتعلم ان الحمار يركب الفرس ؟ قال لها : انا حمار ؟ قالت : عندي حمار، وعند غيري لا. قال لها طيب. راح الرجل. من بعد شهرين زمان، وقع زواج فى البلد الذي فيه الحرمة. راح الرجل للزواج، وصل الى البلد، والحرمة لها معشوق ثاني. سال عن الحرمة، قالوا له : في البيت، وعندها فلان. وصل الى عند الباب، حصل الباب مسدود. سمع الكلام من داخل الباب، تم يتسمع، سمع الرجل يقول للحرمة : باعارضش الى مكن [4] الفلاني. والمكان هذا كثير متطرف. قالت له الحرمة : طيب، شف انا باجيب لك عشا. اما الرجل ذا، التقط كلامهم وراح. خذ الما المغرب، واخذ له ثنتين فتايل، ارشن [5] في اطرافها. وخد قليل، وصا،

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[1] شويفه, dim. of شوفه, "appearance."

[2] جَمّ = كثير.

[3] عليش, for عليكِ, the كِ of the fem. changing to ش.

[4] مكن for مكان.

[5] رَشَّن, "to light; kindle a fire."

معشوق الحرمة. لقي الفتايل دمسامعه، واقبل على المعشوق. حسب انه شيطان، شرد. من بعد قليل، اقبلت الحرمة، ومعها عشا معشوقها، وصلت الما المكن. قالت له: خد عشاك، في مدى ما تتعشى، انا بارد. التقى العشا، وتعشى. من بعد، جاوت الحرمة وقعدت. قبض في الحرمة، يوم قده يجامعها، نهق مثل الحمار. قالت له الحرمة: ها! من ذا؟ قال: الحمار علفرس. ومن بعد، الحرمة راحت وهي محصورة، وراح الرجل مسرور.

V. حكاية الولد الصقر[1]

كان واحد من اهل شبام[2] عنده ولد. ذاك اليوم، زهم[3] ولده، قال له: شف ذا البقش،[4] سرهات لحم، ورد البقش. راح الولد، درج في السوق، اذا جا عند جزار، خد لحم منه، طلبه البقش، قال: ابوي يقول، خد لحم، ورد البقش. قال له الجزار: من يعطيك لحم بلا بقش؟ وسار في السوق على هدا الامر الما لغب، من بعد، رد الى عند ابوه. قال له: يابه، ما عطاني شي لحم بلا بقش. طرب من ولد اخوه، وولد اخوه كان صقر، يلقطها[5] وهي فارة. خد البقش من عمه، وراح الى السوق. ودار في السوق، لما حصل لحم الدي ما عاد شي احسن منه. خد منه لحم، واعطى الجزار البقش. رد الى عند عمه، عطاه اللحم. قال له: هدا اللحم، وهدا البقش، قال له: وين البقش؟ رواه الشحم، و قال له: هذا البقش، وهدا اللحم. قال له: عرفت انك رجال، وتنجي في حاجه اذا حد امتان بك. ومن امثال العرب: خد اللحم، و رد البقش يعني، ان كل حاجة توخذها وهي زينة، ما يتحسف الادمي على قيمتها.

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[1] صقر orig. "hawk"; is an epithet, "intelligent; clever."

[2] A town of Ḥaẓramaut.

[3] زَهَم, "to call."   [4] بَقّش, "small coins; change."

[5] The pron. ها refers to كلمة, 'word,' understood.

VI. حكاية البدوي والنمر

كان واحد بدوي ضاع عليه جمل ، وراح يدور له ، من شعب الى شعب خذ الما غدر عليه الليل ، وافق النمر ، اقبل عليه بايقتله النمر ، قال البدوي للنمر : رباع ، [1] يا بالحارث ! مال النمر منه ، وكان النمر يساير الرجل . قام البدوي ورقد على صبر العيد . جا النمر ، وقع منه وداخل . خذ البدوي الما نام النمر ، عامله البدوي بما يعاملون نه اليهود لمن يرابهم ، دفر[2] النمر ، حط[3] هابط ميت . والبدوي خذ الى الصبح ، حصل النمر ميت تحت العيد . راح البدوي . بعد ثمانية ايام ، طلع فى البدوي جدام . واذا رحت والبدوي معزول ، لا هو حي ولا هو ميت .

VII. حكاية الشيخ وبنته

كان واحد شيخ عنده بنت ، ولا معه من الصيب[4] الا هي . كبرت البنت ، جا ولد اخوه يبغاها زواج ، غلب[5] ابوها ، قال له : انت فقير ، ما عندك مال ، ولا اعطيك بنتي . من بعد ، جا زقر[6] مطرد ، وهو ولد حايك . جا الى البلد هذا ، رآه الشيخ عجبته صورته ، ساله : انت ولد من ؟ قال : انا ولد الشيخ الفلاني ، تعاشيت انا وابوي ، والشيطان حضر ما بيننا [7] ، وطردنا . قال له : تبغى عندي ، واكتب عليك خط ان تكون عندي ، و ازوجك على بنتي ؟ قال له : طيب ! اليوم الثاني ، جاب من القاضي ، وكتب الخط عليه ، [8] اوعد بالزواج . وقع الزواج ، ليلة دخل على البنت ، جا يبغى عند البنت ،

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[1] رباع, "quarter!" رَابَعَ, "to associate intimately with."

[2] دفر, "to kick."

[3] حطّ, "to fall."

[4] صِيْب, "issue; offspring."

[5] غَلَب, "to refuse."

[6] زقر, "young."

[7] i.e., "we had words."

[8] اكتب عليك, lit. "I'll write against you," i.e., "bind you in writing."

نهصته البدت، فزع من البدت ، وبيت لحاله. خذوا الما الصبح ، جا ابو البدت. مع يوم دخل ، قالت له بنته: هدا الذي اعطيتنا اياه ، هذا ما يكون ولد شيخ ، ولا قبيلي ، [1] هدا يا ولد حيك يا ولد نجار. قال لها: ليش؟ بايش عرفت؟ قالت: ما هو شي، شل الولد الشيخ نقداه ، وحك عليه جم ، الما قراه ولد حيك. طرده. اليوم الثاني ، طرب من ولد اخوه ، وعقد له بالبدت. دخل ملبدت ، جا يبغى عندها ، قالت له: اندفع الى بم ، بالنهر. قرب منها ، وقبض بعقدتها ، رمى بها الى الارض ، ولمخها بكفه. [2] من بعد ، قال لها: قومي عمري الرشبه. قامت عمرت رشبه ، من الفزع. من بعد ، قال لها: فصي رجولي. وبيت طول الليل: سوي كدا ، سوي كدا ، ما خلاها تدام. الما الصبح ، جا ابوها. مع يوم دخل ، سبرت تبكي. قال لها: لايش تبكين؟ حكت له بما جرى من ولد عمها. قال لها ابوها: هذا ولد فلان ، اصل وفصل ، ما هو ولد الحايك. واما انا رحت من عندهم والولد هو وزوجته عايشين بالوفاق.

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VIII. حكاية يحيى عمر المقنبس[3]

كان يحيى عمر في بلد صنعا ، وسافر من بلد صنعا الى الهند ، وصل الى بروده ، وتزوج في بروده. خد هو والحرمة خمسة عشر يوم. بعد الخمسة عشر يوم ، طلق الحرمة ، وراح الى هندوستان ، ومن هندوستان الى كلكته ، ومن كلكته الى مدراس ، وعود الى بروده بعد ستة عشر سنة. جا الى عند العرب الذين في بروده ، وخد كم من يوم في بروده. قالوا له العرب: نبغاك نتزوج. قال لهم: طيب. واذا الحرمة الذي اخذها من سابق شلت بحمل ، والحمل هو منه ، وجابت بنت. بلغت البنت سبع سنين ، وماتت امها؛ وربوها اخوالها؛ ولا يدرون من ابوها. ويحيى عمر يوم بيسافر ، عطى

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[1] قبيلي, "one of the fighting families in a tribe" [2] حيك for حائك.
[3] مقنبس, "one who plays the قنبوس, 'a kind of guitar.'"

الحرمة حلقة فضة. الحرمة يوم ماتت، عطوا البنت الحلقة، وفيها مكتوب : " يحيى عمر ". قالوا له العرب : زقرة، بنت عربي، يتيمة، ولا لها احد ; يوم[1] تاخذها فهو احسن، تكفل العار. قال لهم : " طيب " يحيى عمر. راحوا الى عند اخوال البنت، رضيوا، وقع العقد. ذاک الليلة، ليلة با يدخل على البنت، استكرى مكان، والمكان فيه فاضلة. دخل على البنت. ومن عاداته، ما ينام الما يشل طريقة، وفي شعره، اذا تكلم، قال " يحيى عمر ". قبل يقرب البنت، شل القنبوس. سمعت البنت بقولة " يحيى عمر " بعد ما شل الطريقة، قرب على البنت. قالت له البنت : ابعد الى ثم : قال لها ليش ؟ قالت له : ان قد جيت هذي البلدة من اول ؟ قال : نعم. وتزوجت فيها ؟ قال : نعم تزوجت. اندرت الحلقة من يدها، وروته اياها. شاف الحلقة. قال لها : ايش هدي الحلقة ؟ من اين جاءتش ؟ [2] هذا الذي اعطيتها الحرمة الذي تزوجت عليها من الاول. قالت له البنت : هاذاك امي، وانت ابوي. من بعد، نام لحاله. واليوم الثاني، راح من بروده، وسافر الى العرب، وزوج البنت على واحد من قبيلته. وانا ما عاد حضرت الزواج.

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IX. حكاية العبد

كان واحد من العرب عنده عبد. حد ذاك اليوم، قال للعبد : رح بيت في الحصن الليلة. ابطأ العبد، واندر بعد المغرب. وصل العبد الما عرض الطريق، واندر في ساقيه. مع [3] يوم اندر، صاحت الهننة.[4] قال العبد : عبد بانقيطة، خير وشر بغيتونا ! اجزع، با اجزع، والا با ارد. واذا عربي جازع طريق. سمع كلام العبد، ثم واقف. قال خصوم مع ذا العبد، يا ايش هذا ؟ سمع صوت الهندة، لو[5] العبد، على كل صوت [6] اللا صاحت الهندة، قال : عبد

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[1] يوم = اذا.

[2] فاضلة، "guest room."

[3] مع يوم، "as soon as."

[4] هَننة، "owl."

[5] لو = و اذا.

[6] اللا : relative pronoun, = الذي.

بالقيطه ، خير وشر؟ بيت العبد طول الليل ، وهو قايم في مكانه . الصبح ، فوت الهدنة ، سببها : لعن ابوش على ابوش ؛ ذلا هدنة ، وانا حسبتهم خصوم . من بعد ، العبد راح الى الحصن ، والعربي راح الى البلد . وهو والعبد من بلد واحدة . قعد العبد في الحصن مدة ساعة ، وراح الى البلد . خذ ، الم الليلة الذايه ، قال له سيده : رح الى الحصن . راح العبد من العصر ، وبيت في الحصن . خذ الما الصبح ، ندروا ناس من العقبة . نهمهم العبد ، قال لهم : اوقفوا مكانكم ، وضربهم اول بندق والثاني . قال له واحد : ليش يا مبارك ؟ احنا آل فلان ، جازعين طريق قال له : من هو ذا ؟ قال : انا فلان . قال : سيدي فلان ؟ قال له نعم ، يا بو سويد . قال لهم : اجزعوا . مع وصول العربي الذي بيت يتسمع للعبد والهدنة ، قال له ليش يا مبارك بهذا الكلام ، وانت بارح بيت في الساقية ، انت والهدنة ؟ قال له العبد : وانت فين ؟ قال : وانا في البيت . قال له : ولا ، من قال لك ؟ قال : الشيطان قال لي . رشن العبد في بندقه ، وضرب العزلي ، صاده البندق . جو اهل البلد ، بعد هو حي . جا سيد العبد ، قال له : ايش ذي الكلام يا فلان ؟ قال له : ذي تشوف . قال له : ايش قلت للعبد ؟ قال له : ما قلت له شي . وحكى له بالامر على حسب ما وقع ، من مبيات العبد هو والهدنة . ونطف[1] المصاب ، وراحوا ودفنوه . وقام بالقبطه ، وسرح بالعبد الى بندر المكلة ،[2] وباعه للقعيطي . وحال ما سرح به وانا عندهم ، ولا عاد حضرت يوم جا بالقيطه ، هو بكم باع العبد . والله اعلم .

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X. حكاية الربح

كان واحد في اليمن ، ربى ربح ، وعلمه شرح العبيد ولعب القدبوس ، واي حجه[3] يقول له سويها ، يسويها الربح . حد الى ذاك اليوم ، قال با اسافر .

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[1] نطف, "to expire."

[2] Makalle, a port on the coast of Ḥazramaut.

[3] حجه for حاجة.

وسافر من ملك الى ملك، وصل الى جاوا، وكان يلقي الفرجة بالربح، يفرج الناس. ذاك اليوم، سوى فرجه تحت بيت الحاكم، والليل، ضوى الى عند ثدين جماعة، وبيت عندهم، علموا بالفلوس الذي معه: حدوا الما في الليل، قاموا للانسان وقتلوه، وبحثوا في البيت و دفنوه، والصبح، فكوا الربح في السوق. راح الربح يصيح في السوق، الما وصل بيت الحاكم. سمع الحاكم صياح الربح. قال: ايش هدا؟ قال: هذا ربح يصيح، ما ندري حق من، ويمكن انه حق الغريب الذي لقى الفرجة امس. قال: خذوا خبر الربح. اجا الفوليس،[1] قال لهم الحاكم: روحوا في قدا الربح. راح يمشي قدامهم، وهم قفاه، الما وصل بهم الى البيت الذي دفنوا فيه الرجل، ودخل بهم وهم قفاه. وصل الما الموضع الذي دفنوا فيه الانسان، سبر الربح يبحث، ميلوا الربح وبحثوا، حصلوا الانسان، قبضوا اهل البيت، وراحوا بهم الى عند الحاكم. سالهم الحاكم، قالوا: خاطر فلوسه، قتلناه. حكم عليهم الحاكم، الواحد ستة عشر سنة. والربح شله، وسفره الى عدن، ومن عدن بلغوه الى ما اليمن. وحالما وصل الى اليمن وانا موجود.

XI. حكاية الشعب المسكون[2]

كانوا الحضارم من عاداتهم يجتمعون في الاسواق، في وقت العصر ووقت العشا. ليلة من الليالي، قعود ثلاثة انفار، ويتناقلون الحديث. قال واحد: حد با يروح الى الشعب الفلاني، اذا وصل القلت ورد منه، اعطيه اربع ريال. قال واحد: انا قال له: لكن بشرط، اعطيك راس جلب،[3] وتروح به الما القلت، وتذبحه، وتدحسه، فاذا ذبحته ودحسته،[4] تضبيه،[5] وتجيبه

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[1] فوليس, "police."

[2] مسكون, "haunted."

[3] راس جَلَب, "one head of sheep."

[4] دَحَس, "to skin."

[5] ضَبَى, "to roast."

كامل ، ما شي قاصر ، ان جبته كامل ، ما عاد الا اربع ريال لزمتدا ، اعطيك اياها ، خيراً بلا شر ، وان رحت وجبت اللحم ناقص ، والا شي صابك ، شف ، مالي حاجه ، ولا شي يلزمني . قال له : ان شي صابنا ، انت بري ، بمحضر الجماعة فلان وفلان . قال له طيب . قال له : شفنا ، اجيب لك كبش على هدا الشرط . قال له : رح ، هاته . راح وجاب الكبش . وخد الكبش منه ، وسار يخطم . وصل الما القلت ، ذبح الكبش ، بعد ما ذبح ، دحس وارشن الدار ، وسبر يضبي بعد ما غلق ،[1] جن ثلاث حريم من الجن ، عجوز وبنتيها ، وقالن له : اقسم ! لما قالن له اقسم ، امتلا من الفزع ومات . والجماعة ، الدي شارطه والدي عنده ، مساحدين ،[2] ذي العين بايجي ، الا ذي العين ، الما الصبح ، ولا له حس .[3] راحوا الى الشعب ياخدون خبر ، حصلوه ميت ، شلوا الميت ودفنوه ، واللحم ما عاد ، حصلوا له اثر . اخدوا الما الليلة الثانية ، اجا واحد وقل : يا فلان ، انت شارطت فلان ومات في شعب الفلاني ، وذا العين انا باشارطك . قال له : شف ، مايقع لك مثل فلان . قال له : مالك حاجه . قال له طيب . قال له : لكن حسب الشرط الذي بيني وبين فلان ، بمحضر الجماعة هاذولا . قال له طيب . راح جاب الكبش . اخذ الكبش منه ، وراح يخطمه . وصل الما القلت ، امتلا من الفزع ، ورد بالكبش حي . وصل الى عند الجماعة ، وقال لمولى الكبش : خد كبشك ، وذا الاربع ريال حسب الشرط . اخد الاربع ريال ، واخد الكبش . اخدوا الما الليلة الثالثه ، جا واحد قال له : يا فلان ، انت تشارطت مع فلان وفلان ، اما فلان مات ، وفلان رد الكبش حي ، وذا العين ، اما واربع ريال خذها مني ، والا اربع ريال اخدها منك . قال له : ها ! شف ، فلان مات ، وفلان رد من عرض الطريق ، ورد الكبش حي ، وانت ، اخاف انك اما تموت ، والا ترد الكبش حي . قال له : ان رديت الكبش حي ، خد اربعة ريال ، وان مت ، انت بري ، بحضرة فلان وفلان . قال له طيب .

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[1] غلّق, "to finish." [2] مساحفين = منتظرين .

[3] حس, "noise"; here, "news."

راح جاب الكبش ، مطاه اياه . اراح يخطم الكبش وصل الى القلت ، وذبح الكبش ودحسه ، ولفلف الحطب ، و ارشن الدار ، وضبى اللحم مع يوم ضباه ، جن الحريم الثلاث المقدم ذكرهن ، وقالن له اقسم ! قال لهن : طيب ، اصبرن . بعد ما ضباه ، قام والقى اللحم في الديم . جات العجوز وقبضت في الديم شل جذنه [1] من الدار ، ورشخ العجوز في وجهها ، وافتك يجري بالديم . افتكن البنات قفاه ، اما واحدة ، تلاحقته ، ورشته باللبن من ضرعها [2] . اوحى [3] اللبن ، وهي ردت عنه ، ارد قفاها ، وعلق اللحم بشجرة ، وتم من بعيد الى بعيد [4] ، قفا البنت . وصلت البنت الى عند امها واختها ، قالت لها الام : فرع[5] عليكن ؟ قالت الذي رشته باللبن ، لا ، ما فرع علينا ، اما انا تلاحقته ، ورشيته باللبن ، ولا بايسلم منه ، بايموت منه ، الا اذا كواه ببرة [6] على كل مفصل . هو ما شي بايضره ، وان ما كواه ، فهو بايموت . اسمع كلام البنت ، و رد وعبر عللحم حقه ، وشله . وصل الما عند الجماعة ، حصلهم قعود ، جاب الديم واعطاه للذي تشارط معه ، قال له خذ اللحم ، تفقده ، شي قاصر فيه يا سوا [7] ؟ اخذ اللحم ، واندره من الديم حصل اللحم كامل ! اعطاه اربعه ريال ونصف اللحم . وراح الى بيته وارشن النار ، وطرح برة في النار ، وكوى على كل مفصل ولا شي ضره . هذا ما كان من حكاية الشعب المسكون *

XII. حكاية ابو نواس و اخوه

كان لابو نواس اخ ، والاخ متخرب في القمار وفي النساء . راح ذلك اليوم يقامر ، ضوى [8] ولا عنده ثياب . جا الى عند اخوه . قال له اخوه :

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[1] جذنة, "a piece of wood."
[2] ضَرْع, "breast"; prop. "udder."
[3] وحي, "to feel."
[4] من بعيد الى بعيد, "at a distance."
[5] فرّع, "to escape."
[6] برة = ابرة, "needle."
[7] سوا , "entire."
[8] ضَوَى, "to return; come away."

ايش ذي الحالة ؟ قال له : هدا الذي تشوف . قالوا الناس لابو نواس : انت عندك مال كثير ، واخوك هدا فقري [1] ، ولا يصلح الا تعطي خوك مية ريال ، يلقي له بيع وشرا . قال : يا ناس ، خوي متخرب ، ولا شي يقعد عنده قد ما حصله يضيعه . قالوا له : لا ، الا تعطيه مية ريال . قال لهم طيب عطاه مية ريال ، راح بالمية ريال ، وصل الما بلد . وصل ولما تحت بيت ، شط [2] الى البيت ، شاف بنت في البيت ، واذا جارية قائمة تحت البيت ، قال : من هدا الدي في البيت ؟ قالت هده حبابتي قال لها : قولي لحبابتش ، تبغي مية ريال وتخلينا اشوفها سوا [3] ، راحت الجارية وقالت لحبابتها . قالت هاتي المية ريال عنده . بدرت الجارية ، وقالت له : هات المية ريال ، وبا تشرف حبابتي من الفتحه ، وافكر فيها الما تلغب . عطاها المية ريال ، طلعت الجارية بالمية ريال ، وشرفت البنت ، تفكر فيها لما لغب ، وراح وصل الى عند اخوه . بعد كم من يوم ، قال له اخوه : ايش سويت بالمية ريال ؟ قال له : والله ، بنت شلتها علي . قال له : كيف شلتها ؟ قال انا رايت البنت حسيدة جم ، وحال ما رايتها ما رايتها سوا ، وان الجارية حقها ذاك الوقت قائمة تحت الباب ، سالت الجـــارية وقلت لها من الدي في البيت ؟ قالت حبابتي ، وانا قلت للجارية ، توخذ مية ريال وتخليـــنا اشوفها سوا ؟ واخذت المـيـــة ريال بالنظر فيها . قال له اخوه : وشفتها وعلت بها ، يا الا شفتها ؟ قال : لا ، الا الشوف . قال له طيب ، قوم ريدنا البيت حقها . قال له : احسن ، قم ! قام ابونواس ، واشترى كبش ، وراح هو و اخوه يخطم الكبش ، وصلوا الما تحت البيت الدي فيه البنت ، قال له : في هدا البيـــت . قفز ابو نواس ، وقال لاخوه : اقبض لي الكبـــش ، وصاح تحت البيـــت ، اقبـــض لي ! اقبض سوا ! سمعـــت الصيـــاح البنـــت ، شرفت . قال ابو نواس : شف بلاش ، عند ذبح الكباش . من بعد ، ذبح الكبش ودحسه ،

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[1] فقري, "indigent"

[2] شطّ, "to look up; go up to"

[3] سَوَا, "properly."

واندر اللحم والعظام لحالها ، اما اللحم قسمه ، واعطى الجارية لحم كثير ، طلعت به الجارية الى عند البنت ، قالت لها : من اين اللحم هذا ؟ قالت : من الذي ذبح الكبش . اخذ الما في الليل ، قال للجارية : بابيت هاهنا ، تحت الباب ، قالت له الجارية طيب . اخذ الما واحد في الليل ، جات كلاب السوق على ريح اللحم ، زقل [1] لهم بعظم ، اهتدوا [2] عليه ، صاح ابو نواس ، اشرفت الجارية ، قالت له : ايش معك ؟ قال : الكلاب با تاكلنا . قال البنت دخليه · داخل السدة [3] . ندرت الجارية ، وفتحت له السدة ، وبندت [4] خذ ساعة ، وجاءت الهوار على ريح اللحم رقل لهم بعظم ، اهتدوا ، صاح قالت البنت للجارية : طلعيه الما برا الباب حق الفاضلة . طلعته ، ثم برا الباب ، تبعته الهوار ، زقل لهم بعظم ، اهتدوا ، صاح ابو نواس . قالت البنت : دخليه داخل الباب . ادخلته ، روته محل قريب السرير حق البنت ، نام ابو نواس ... ... والبنت تنظر اليه ... ... خذت الى الصبح ، جاءت والدتها وابو نواس قاعد . قالت : من هذا عندكم ؟ قالت هذا رجل غريب ... ... سمع ابونواس ، صاح يا عيالي ! قالت له العجوز استر علينا ، قال لا ، بغيت عيالي قالت استر علينا ، بايسمعون الناس ، قال وايش علي ؟ [5] خذ لك مية ريال واسكت . قال لا . الا ميتين . الا ثلاث . الا اربع . ورضي على الاربع المية ، واخذ اربعمية ريال وراح ، واعطى اخوه نص ، ونص شله ، راح اخوه ضيع الميتين في المقامرة . رد الى عند ابو نواس ، قال له : اعطيتك مية وفوتها ، واعطيتك الميتين ، وذا الحين لو تبغى خمسية [6] ما اعطيك ، لا انت اخوي ولا انا اخوك - هذا ما كان من حكاية ابو نواس واخوه ، وانا رحت من عندهم اما ابو نواس تاجر كبير ، واخوه وحش [7] ، ماله عشا .

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[1] زَقَلَ, "to throw."

[2] اهتَدّوا, "to scramble."

[3] سُدَّة, "threshold; main gate."

[4] بَنَّد, "to close; shut."

[5] ايش عليّ, "what is it to me?"

[6] خُمْسِيَّة, "a copper coin."

[7] وَحْش, "hungry."

XIII. حكاية الكربي

قبيلة اسمها الكرب ، كان لهم طلب [1] عند يام ، واتفقوا ثلاثة من الكرب ، وقال المحروق [2] : بانغزي على يام قال له آخر : ما حاجه ، الارض بعيده ولا شي ما [3] في الطريق . قال الذي كان محروق قال : تروحون في قداي ، والا اروح وحدي ؟ قالوا له : اذا تروح وحدك واحنه نروح في قداك ، اما موت والا حياة . وتم شورهم علمسير ، وساروا . وخدوا مطيه واحدة معهم ، اما اثنين ركبوا علمطيه ، وواحد يمشي ، اذا لغب ذي يمشي ، نزل واحد من الركاب ، وركب الدي يمشي ، تم الاخر يمشي الما يلغب ، ونزل الثالث ، وركب الدي يمشي ، وتموا يمشون مدة شهر ونص ، لما ليلة من الليالي ، نصف الليل ، وصلوا الى البحر ، ولا عندهم خبر . اما الذي كان يمشي على رجوله ، خلف اقضاء الحاجة ، واهل المطية تموا يمشون ، ودخلت بهم المطية في البحر ، وغاصت بهم المطبة ، وماتوا . كان الذي يمشي على رجوله ، تم بالطريق قفا اخوته ، الما وصل الى البحر ، حس بالماء ، ارد من الماء ، وقعد تحت شجرة الما الصبح ، افكر الصبح ، لو ذا بحر ! بغى اخوته ، ما عد حدهم ، وراح على سيف البحر ، واخذ ثلاث ايام وهو يمشي على سيف البحر ، ليلة الثالثة العصر ، وصل الما عند بدو بيوتهم من شعر . ودخل في بيت ، وحصل رجل وحرمه ، وهم الرجل ان يقتله ، قالت الحرمة : ما حاجه ، رجل غريب . واخذ الما في الليل ، وجابوا لهم العيش ، بعد ما تعشى قال لهم : با ارقد ، رووه محل ، كان طريق البيت في المحل الدي روا له اياه . اخذ الما نصف الليل ، وصل رجال الحرمة ، وحصل الرجال نيم ، ثوره ، ساله من انت ؟ من اين جيت ؟ قال له جيت من المشرق ، فقير . دخل رجال الحرمه الى عند حرمته ،

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[1] طَلَب, "blood to be avenged."

[2] مَحْرُوق, "the man who had received the injury."

[3] لاشي ما, "there is no water."

حصل الرجال عندها ، اندر سيفه وضربه بالسيف ، ومات . بعد ما مات ، سحبه الى عند الباب ورماه ، وجاب بعير معه ، وحمل المقتول على البعير ، واركب الغريب فوقه ، وشده ، ليحذف بهم في البحر ، وراح يخطم البعير . وذا شجرة على السيف ، شجرة نوص [1] ، وجاب البعير بسنح الشجرة ، فشاف الشجرة الرجل الغريب ، لما وصل بسنح الشجرة ، تقبض بالشجرة ، وفك البعير ، راح راعي البعير يخطم ، لما وصل للبحر ، وقطب الشوار [2] بالسكين ، ورماه في البحر ، ورد يخطم بعيره ، وبطنه الغريب في قدا المقتول . الحد الغريب بعد ساعة ، وندر [3] من الشجرة ، وقال : في ذا الحين وين نروح ؟ والله ، لا اروح الا الى البدو هدا ، اما موت والا حياه . وجا الى بيت ثاني ، وحصل شايب وعجوز في البيت ، وسلم عليهم ، ردوا السلام عليه قالوا له من اين انت ؟ والى اين باغي ؟ قال لهم ، والله ، من المشرق ، وباغي الى القبلة ، وفي ذا الحين ارد الى المشرق ، خذوا الى الصبح ، وساله الشايب : عندك خبر من ولدي ؟ قال لهم الغريب ، كيف لونه ؟ قالوا له : لونه رجل صفراني ، طويل القامة ، ملتحي . قال لهم : ايش تعطوني اقول لكم بولدكم ؟ قال له الشايب ، الذي تبغاه ، اعطيك اياه قال له : ما ابغى منك الا تبلغني الى ارضي . قال له بدمتي . قال له ، اذا كان هكذا ، ولدك شوف ، راعي البيت هداك قتله ورماه في البحر . قال له الشايب : هاه ! هكذا ؟ قال نعم . زهم الشايب من اصحابه ، وجوا اصحابه ، وقال لهم : فلان قتل ولدي . اجتمع شورهم على قتل الرجل الذي قتل ولد الشايب ، وراحوا اثنا عشر نفر منهم ، وزهموا الرجل ، خرج عليهم من البيت ، وقتلوه ، ضربوه اثنين بالسيوف ، اجوا اصحاب المقتول وقالوا : من ذي قتل فلان ؟ قالوا : آل فلان . قالوا : يا الله ، فوقهم ! ووقعت اللقيا [4] ما بينهم وقتلوا اثني عشر نفر ، وافترعوا . بعد

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[1] نُوص, "a kind of palm-tree."

[2] شوار, "trappings."

[3] نَدر, "to come down"

[4] لُقَيَّا, "encounter; fight."

ما افترعوا . قال الشايب لاصحابه ، هذا رجل غريب جاب لي خبر ولدي ، انه فلان قتله ، والا بغى يصير طهيمة[1] ، وذا العين شليت له شرط ان ابلغه الى ارضه ، وايش الشور ، وانا شايب ما اقدر ؟ قالوا له طيب ، يصيرون بها[2] الصغار يبنشونه[3] ، اذا كان شليت له شرط . قال لهم : شرطه في الدمة ، اندروا معه ثلاثة انفار ، وراحوا الما روس الجبال بحق حضرموت ، بعد ما شاف الجبال ، قالوا له : شف حضرموت ، هاذك جبالها ، ومعنه[4] نرد . قال لهم طيب . ردوا ، اما هم ردوا ، والكربي نفد[5] ، تبدش[6] الى حضرموت . هذا ما كان من حكاية الكربي واخوته *

قصة ابو نواس والشامي XIV.

كان ابو نواس باليمن ، وراح من اليمن الى ارض الشام ، ومعه مية ريال لخاطر التجارة . اجا لما لبلاد الشام ، وحصل رجل . قال له : منين جيت ، يا ذا الوجه ؟[7] قال من اليمن . قال له : ولما جيت ؟ قال له : جيت لخاطر التجارة قال له : ايش ، تبغي بالتجارة ؟ انا اوريك شغل ، اذا سويته اعطيك مية ريال ، وان ما سويته ، اخذ المية ريال حقك . قال له ابو نواس طيب . قال له غدوة . قال له طيب . اخذ الما الصبح ، وقام راعي[8] الشام ، وخرج لابو الدواس البقر بلا حبال والحلي[9] بلا حبال ، وقال له : اندر بالبقر الى الحقل ، ان عملت عليها بلا حبال ، اعطيك المية ريال ، وان ما عملت عليها ، اخذ منك المية ريال اللي معك . قال له ابو نواس طيب ،

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[1] طَهَّيمة, "one whose blood goes unavenged."

[2] يصيرون بها, "will do it."

[3] نَشّ, "to cause to reach."

[4] معنه = نَحْنُ, "we."

[5] نفد, "to go on"

[6] - تبنّش, "to reach."

[7] يا ذا الوَجّه, "Sir! O thou of the noble countenance."

[8] "He of Syria (= the Syrian)."

[9] حلي, "plough"; also, "furrow."

اخذ البقر ابو نواس وراح الى الحقل ، واخذ السكين وقطب من خورة [1] الثور الما ذيله ، ندر [2] سبت [3] ، وقفز للثاني من البقر ، وسوى فيه مثل خوه [4] ، وقام للواحد من الجلـد وعصب به الحلي ، والثاني عصب به ارقاب البقر ، وعبـر اول حلي والثـاني والثالث ، وماتوا البقر .

ضوى ابو نواس الى عند راعي البقـر . قال له : ها ! عملـت ؟ قال له عملـت . وين البقـر ؟ قال له : البقر في القطعة [5] . ندر راعي البقـر الى القطعة ، وحصل البقر موات ، رد طلع الى عنـد ابو نواس ، وسبه سب كثير . قال له ابو نواس : ان كنت اشتعذـت [6] ، هات المية ريال ، حسـب الشرط بينـي وبينـك ، واروح . قال له : لا ، عادنا [7] اورويك شغل ثاني . قال له طيب . قال : قم ، اطلع معي الى البيت ، وا رويك الشغل . طلع معه الى البيت ابو نواس . وعند راعي البقر امراة حقه تطحن هابط ، نزل زوج المراة الى عند حرمته ، وقال لها اذا جاچ [8] ابو نواس قال الش [9] ، اسكتي ! لا تسكتي . قالت له طيب وطلع الى عند ابو نواس : وندر سكت الحرمة ، اذا سكتت الحرمة ، اعطيك الميتين ريال . قال له ابو نواس : طيب نزل ابو نواس ، حصل الحرمة تغني ، قال لها اسكتي : قالت له : ما اسكت . الا ما طاعت ، قام شال الدقيق في يده ، والقاه في ثمها وفي نخرها [10] ، ماتت الحرمة ، طلع الى عند زوج الحرمة ، حصله قاعد . قال له سكتتها ؟ قال له نعم . ندر الى عند الحرمة ، حصلها ميته ، رد الى عند ابو نواس وسبه مثل الاول بل اكثر ، قال له ابو نواس ما حاجة للسب ، ان كان حنقت ، هات الفلوس حقي واروح ، قال له لا ، ما حنقت ، عاد اورويك شغل

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[1] خَوْرَة, "nape of the neck." [2] نَدَّر, "to take out."

[3] سِبْت, "leather." [4] خوة, for اخوة. [5] قِطْعَة, "plot."

[6] اشتعدن, "to be angry." [7] عادنا = عادانا, "I will again."

[8] جاچ or جاش (= جاكِ). [9] إلش = لكِ.

[10] نُخَر, "nostrils" : pl. of نخرة.

تالف . قال له ابو نواس طيب . قال له اقعد هنا الما اريك الشغل
خذ الما بالليل ، وحط الغيث ، ثور [1] ابونواس وقال له : اندر كنن [2]
روس الغنم . قال له طيب ابونواس . ندر ابو نواس الى عند الغنم
وقطب روسهم ، والقاهم في المكن [3] ، واطلع الى عند راعي الغنم .
قال له راعي الغنم هاه ! كننت روس الغنم ؟ قال له : كننت روس
الغنم . ندر راعي الغنم ليشوف ، حصل الغنم مذبحة . ارد الى عند ابو نواس ،
وسبه سب كثير. قال له ابو نواس : ان كان حنقت ، هات الفلوس حقي .
قال له : والا عاد اكبر منه حنق [4] ؟ وشال المفاتيح حق العزلة [5] حقه ،
وفتحها ، واعطاه اربعمية ريال . وراح ابونواس الى ارض اليمن *

حكاية المشعبة [6] والمزمار والضيون [7]

رجل توفى ، وخلف ثلاثة اولاد ، وخلف لهم مشعبة ، ومزمار ، وضيون .
بعد القسمه ، راح مولى المشعبه يتعيش على نفسه ، من بلد ، الى بلد ،
لما وصل الى بلد ، وشافته حرمة . وقالت له : ايش هذا معك ؟ قال لها
هذا اصلح به العوجان [8] . قالت له : ابغاك تصلحنا ، ان رجالي اذا تكلم
قال ، انت عوجا [9] من السماء الى الارض [10] . قال لها طيب ، ايش تعطيني ؟
قالت له : اعطيك خمسين ريال . قال لها طيب ، انا اسمحش [11] . اجا
للحرمة ، ونيمها على المشعبة ، وعصب ايديها ورجولها وراسها ، وسار .

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[1] ثَوَّر, "to rouse up." [2] كَنَّن, "to put under shelter."

[3] مَكَن, "shelter; pen (sheep)."

[4] والا الخ, "what then! can there be a greater reason for anger?"

[5] عُزلة, "closet." [6] مَشْعَبَة, "ladder."

[7] ضَيْوَن, "cat." [8] عُوجان, pl. of أَعْوَج.

[9] عَوْجاء, he means "crooked in nature."

[10] من السماء الى الارض, "from heaven to earth," *i.e.*, "entirely."

[11] سَمَّح, "to straighten."

وجا رجال الحرمة ، وقال لها : ايش هذا ؟ قالت له : انه جا واحد يصلح العوجان ، وانت اذا تكلمت قلت ، انت عوجا من السماء الى الارض ، وانا خليته يسمحنا . قام رجال الحرمه ، وفك العصب ، وضربها بالصميل [1] ، وسيرها الى عند اهلها ، وطلقها . واما راعي الضيون ، بعد ما رد اخوه قال انا اروح واتعيش . شد الضيون بحقه ، ويدرج من بلد الى بلد لما جا الى بلد قريبا لليل ، وغدر عليه الليل ، جا الى عند مولى متجر [2] وقال ابيت في المتجر ، والصبح اروح قال له مولى المتجر . لا تبيت هنا ، قم معي الى البيت بيت . قال له مرحبا [3] ، راح معاه ، وقد عند الحرمة عزب ، [4] وجنته بالشطفه ، [5] وصلوا الى البيت ، وجاب له العيش ، والما بعد ما تعشى ، قال ارقد . قال له طيب ، ارقد اصبح الصبح ، اراح مولى البيت الى المتجر ، ومولى الضيون تم في البيت ، شاف رجول العزب تحت الشطفة ، قرب الضيون الى عنده وفصها ، [6] صاحت الضيون قال لها اسكتي ، لا تفضحينا قبل الناس . سمعته الحرمة ، قالت له ايش معك تكلم الضيون ؟ قال الضيون تجيب كلام ما يدري به الا الله وانا . قالت له ايش تقول ؟ قال مالش حاجة قالت له : سالتك بالله تقول لي . قال تقول رجل تحت الشطفة . قالت له استر علي ، لا تفضح بي قبل الناس . قال ذي العين قد اروح اعلم زوجش . قالت الحرمة لا تقول لزوجي ، وخد الذي تبغاه قال لها ايش تعطيني ؟ هو واياها لما ثلاثمية ريال ، وخد له ثلاثمية ريال منها ، وراح الى بلاده ، حصل خوته [7] ، مولى المشعبه مع خمسين ريال ، وذي ثلاثمية ريال ، والقوا لهم متجر ، وخلوا راعي المزمار في المتجر ، وهم راحوا يجيبون التجارة [8].

تمت

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[1] صَمِيْل, "club." [2] مَتْجَر, "shop." [3] مَرْحَبَا, "very well!"

[4] عَزَب, "a lover." [5] شَطْفَه, "matting of date-palm leaves."

[6] فَصّ, "to pinch." [7] خوته, for اخوته.

[8] تجارة, "goods; merchandise."

JANUARY, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 2nd January, 1907, at 9-15 p.m.

THE HON'BLE MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present:—

Dr. N. Annandale, Mr. R. Burn, Babu Manmohan Chakravati, Mr. L. L. Fermor, Mr. D. Hooper, Dr. H. H. Mann, Major F. P. Maynard, I.M.S., Pandeya Umapati Sharma, Lt.-Col. D. C. Phillott, Mr. C. Stanley Price, Mr. H. Sharp, Pandit Yogesa Chandra Sastri-Samkhyaratna Vidatirtha, Mahamahopadhyaya Haraprasad Shastri, Mahamahopadhyaya Satis Chandra Vidyabhusana.

Visitors:—Major H. Robertson, and Mr. E. Vieux.

The minutes of the last meeting were read and confirmed.

Fifty-six presentations were announced.

The General Secretary announced that the Hon. Mr. John Hooper had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Mr. J. Macfarlane, an Ordinary Member of the Society.

The Chairman announced the appointment of Babu Surendra Nath Kumar as First Library Assistant of the Society.

Khan Bahadur Nasir Ali, Salt Department, Sultanpur, Gurgaon, proposed by Lt.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Lieut. H. C. Pulley*, 12th Pioneers, Jhansi, proposed by Lt.-Col D. C. Phillott, seconded by Dr. N. Annandale; *Babu Rakhal Das Banerji*, Student in Archæology, proposed by Dr. N. Annandale, seconded by Mahamahopadhyaya Haraprasad Shastri; and *S. Naseer Hosein Khan*, Landholder, Calcutta, proposed by Dr. M. M. Masoom, seconded by Mahamahopadhyaya Satis Chandra Vidyabhusana; were ballotted for as Ordinary Members.

Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha exhibited pictures and images of Lakshmī (the goddess of wealth and beauty), and read a note on them.

The following papers were read:—

1. *Chronology of Indian authors: a supplement to Miss M. Duff's Chronology of India.—By* NILMANI CHAKRAVARTI, M.A., *Research Scholar. Communicated by* MAHAMAHOPADHYAYA HARAPRASAD SHASTRI.

2. *Gentiana coronata*, Royle.—*By* I. H. BURKILL.

3. *Introduction of written languages in Mongolia in the 13th century, A.D.*—*By* RAI SARAT CHANDRA DAS, BAHADUR.

4. *Note on the Diet of Tea Garden Coolies in Upper Assam and its nutritive value.*—*By* DR. HAROLD H. MANN.

5. *Sanskrit works on literature, grammar, rhetoric, and lexicography as preserved in Tibet.*—*By* MAHAMAHOPADHYAYA SATIS CHANDRA VIDYABHUSANA.

6. *On the Cheetah.*—*By* LT.-COL. D. C. PHILLOTT and R. F. AZOO.

These papers will be published in a subsequent number of the *Journal.*

The Adjourned Meeting of the Society (Medical Section) was held on Wednesday, the 12th December, 1906, at 9-15 P.M.

Major W. J. Buchanan, I.M.S., in the chair.

The following members were present :—

Dr. A. S. Allan, Miss Flora Butcher, M.D., Dr. Adrian Caddy, Dr. Arnold Caddy, Major F. J. Drury, I.M.S., Dr. H. Finck, Lieut.-Col. G. F. A Harris, I.M.S., Dr. W. C. Hossack, Dr. W. Kennedy, Dr. M. M. Masoom, Captain J. W. Megaw, I.M.S., Capt. D. McCay, Major D. M. Moir, I M.S., Captain J. Mulvany, I.M.S., Major F. O'Kinealy, I.M.S., Major L. Rogers, I.M.S., Captain J. W. Urwin, I.M.S., Major J. C. Vaughan, I M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors :—Major T. H. McDermott, Captain D. Munro, I.M.S., Miss Nicol, Dr. T. F. Pearse, Mr. J. Hardy Taylor.

The minutes of the last meeting were read and confirmed.

Major Maynard, I.M.S., showed a case of adeno-sarcoma of the neck, and one of abdominal nephrectomy for malignant renal tumour.

Major Rogers showed a specimen of cirrhosis of the liver due to Leishman-Donovan bodies.

The discussion on Major Rogers' "Demonstration of the Temperature Curves of the Short Fevers" was continued, and Messrs. Megaw, Arnold Caddy, Harris, Moir, Hossack, Buchanan, Kennedy, McCay, Pearse, Vaughan, and Rogers, took part.

FEBRUARY, 1907.

The Annual Meeting of the Society was held on Wednesday, the 6th February, 1907, at 9-15 P.M.

HIS HONOUR SIR ANDREW FRASER, M.A., LL.D., K.C.S.I., President, in the chair.

The following members were present:—

Babu Muralidhar Banerji, Babu Rakhal Das Banerji, Major W. J. Buchanan, I.M.S., Mr. I. H. Burkill, Babu Manmohan Chakravarti, Mr. J. A. Chapman, Mr. J. N. Das-Gupta, Mr. Hari Nath De, Mr. A. Earle, Mr. L. L. Fermor, Rev. E. Francotte, S.J., Babu Amulya Charan Ghosh Vidyābhuṣaṇa, Mr. H. G. Graves, Mr. H H. Hayden, Mr. D. Hooper, Mr. W. W. Hornell, Mr. H. E. Kempthorne, Mr. E. D. Maclagan, Dr. H. H. Mann, Mr. E. Marsden, Babu Panchanan Mukhopadhyāya, Major F. O'Kinealy, I.M.S., Rev. A. H. Phillips, Lt.-Col. D. C. Phillott, Mr. C. S. Price, Dr. P. K. Ray, Rai Ram Brahma Sanyal, Bahadur, Mahamahopadhyaya Haraprasad Shastri, Babu Girindra Kumar Sen, Paṇḍit Yogeśa Chandra S'astri-Sankhyaratna-Vedatirtha Mahamahopādhyāya Satis Chandra Vidyābhuṣaṇa, Mr. E. Vredenburg, Mr E. R. Watson, and Rev. A. W. Young.

Visitors:—Mr. G. B. Abbott, Babu Gopal Chandra Banerji, Babu Sorojanarain Banerji, Babu Sarat Chandra Chatterji, Mr. W. A. K. Christie, Babu Hem Chandra Das Gupta, Lord Radstock and Mr. S. K Ratcliffe.

According to the Rules of the Society, the President directed the voting papers to be distributed for the election of Officers and Members of the Council for 1907, and appointed Messrs. L. L. Fermor and W. W. Hornell to be scrutineers.

The President announced that the Elliott Prize for Scientific Research for the year 1906 would not be awarded, as none of the essays received in competition was of sufficient merit to justify the award of the prize.

The President also announced that the Barclay Memorial Medal for the year 1907 had been offered to Lt.-Col. A. W. Alcock, LL D., C.I.E., F.R.S.

The President called upon the Secretary to read the Annual Report.

ANNUAL REPORT FOR 1906.

The Council of the Society has the honour to submit the following report on the state of the Society's affairs during the year ending 31st December, 1906.

Member List.

It is satisfactory to note that there has been an extraordinary increase in the list of Ordinary Members.

During the year under review, 71 Ordinary Members were elected, 14 withdrew, 4 died, and 3 were removed from the list under Rule 40, being more than three years absent from India. The total number of members at the close of 1906, was thus 407 against 357 in the preceding year. Of these 173 were Resident, 147 Non-Resident, 15 Foreign, 20 Life and 51 absent from India, and one Special Non-Subscribing Member, as will be seen from the following table, which also shows the fluctuations in the number of Ordinary Members during the past six years:—

YEAR.	PAYING.				NON-PAYING.				TOTAL.
	Resident.	Non-Resident.	Foreign.	Total.	Life.	Absent.	Special Non-Subscribing	Total	
1901	123	133	13	269	22	36	1	59	328
1902 ..	126	126	14	266	21	46	1	68	334
1903	127	126	15	268	21	45	1	67	335
1904 .	132	130	14	276	21	45	1	67	343
1905 ...	144	133	12	288	20	47	1	68	357
1906	173	147	15	335	20	51	1	72	407

The four Ordinary Members whose loss by death during the year we have to regret, were Mahamahopadhyaya Mahes Chandra Nyayaratna, Mr. Womes Chandra Bonnerji, Moung Hla Oung and Mr. John Macfarlane.

There was one vacancy in the list of Honorary Members and this was filled up by the election of the Right Hon. Baron Curzon, of Kedleston.

The List of Special Centenary Members continued unaltered, the number standing at 4.

Among the Associate Members there has been one death, *viz.*, Maulavi Abdul Hai. The number now stands at 12, leaving three vacancies to fill up.

No members compounded for their subscriptions during the year.

Indian Museum.

During the year, there have been two vacancies amongst the Trustees caused by the retirement of Sir Alexander Pedler and the death of Mr. J. Macfarlane; Mr R. P. Ashton and Lt.-Col. D. C. Phillott were appointed to fill them. The other Trustees who represent the Society are :—

G. W. Küchler, Esq , M.A.
T. H. Holland, Esq., F.G S., F.R.S.
The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L.

Finance.

The Accounts of the Society are shown in the Appendix under the usual heads. Statement No. 10 contains the Balance Sheet of the Society, and of the different funds administered through it.

The credit balance of the Society at the close of the year was Rs. 1,79,519-3-3 against Rs. 1,93,143-1-9 in the preceding year.

The Budget for 1906 was estimated at the following figures :—Receipts Rs. 18,700; Expenditure Rs. 26,656 (Ordinary Rs 18,683; Extraordinary Rs 7,973). Besides these estimates of expenditure, it was stated in the last Annual Report that there would be a heavy expenditure on account of repairs and structural improvements in the Society's building.

The actual receipts for the year, exclusive of entrance fees, have amounted to Rs. 23,687-1-0, or about Rs. 5,000 in excess of the estimate. The sum of Rs. 1,792 has been received as entrance fees, and of this the sum of Rs. 1,750 has been credited to the Reserve Fund, which now stands at Rs. 1,52,950. The receipts have exceeded the estimate under the heads of "Subscriptions," "Sale of Publications," "Interest," and "Rent for Rooms," the increases being, respectively, Rs. 2,266-10-0, Rs. 2,162-15-9, Rs. 530-13-1 and Rs. 50.

The Ordinary expenditure was estimated at Rs. 18,683, and the actual expenditure has been Rs. 19,717-14-11 or about Rs. 1,000 in excess of the estimate. The expenditure has exceeded the estimate under the heads of "Salaries," "Commission," "Stationery," "Lights and Fans," "Taxes," "Postage," "Freight" and "Printing," and has been less than the estimate under the heads of "Contingencies" and "Insurance." "Salaries" have been higher owing to the payment of grain compensation allowances, and to the payment of a higher salary to one of the staff. "Taxes" have been higher owing to the payment during the year of the taxes for the last quarter of the preceding year. The other increases, which are not large in any case, have been due to the greater volume of work done during the year.

The Extraordinary expenditure for the year was estimated at Rs. 7,973, the charges to be incurred under ten heads. Under these heads the expenditure has amounted to Rs. 8,656-2-5 or about Rs. 700 in excess of the estimate. The sum of Rs. 2,300 was budgeted for printing the *Journal and Proceedings* and *Memoirs* during 1905. The sum of Rs. 2,875-2-0 has been spent under this head. The sum of Rs. 1,000 was budgeted for the new Library Catalogue, and the sum of Rs. 1,600 has been spent under this head. The sum of Rs. 288 was budgeted for picture rods, but has not been spent.

The sum of Rs. 7,758-3-9 has been spent on repairs to the Society's building. No definite amount was budgeted for under this head. The sum of Rs. 2,232-9-9 has been paid for printing the "Materials for a Flora of the Malayan Peninsula." This was not budgeted for. There was a loss of Rs. 453-7-0 on Government paper sold during the year.

The year's expenditure has exceeded the receipts by Rs. 15,231-4-10, and the Temporary Reserve has been drawn on to the extent of Rs. 11,600. The Temporary Reserve now stands at Rs. 31,750 (face value), against Rs. 45,100 at the close of the preceding year, the sum of Rs. 1,750, the amount credited to the Permanent Reserve out of receipts from entrance fees, having been transferred from Temporary Reserve.

The following sums were held at the close of the year on account of the different funds administered through the Society :—

	Rs.	As.	P.
Oriental Publication Fund	1,335	14	9
Sanskrit MSS. Fund	3,643	8	11
Arabic and Persian MSS. Fund ...	1,985	8	9
Bardic Chronicles MSS. Fund ...	2,400	0	0
Total ...	9,365	0	5

The Budget estimate of Receipts and Disbursements for 1907 has been fixed as follows :—Receipts Rs. 21,150, Expenditure, Rs. 20 675.

The Budget estimate of Receipts is about Rs. 2,500 less than the actuals of 1906. "Publications" are not expected to yield so much, three especially large orders having been received last year. "Interest" will be less than in 1906, as a smaller amount of Government Paper is now held. The estimate of "Subscriptions" is less than the actuals of 1906. It will probably be exceeded.

The Budget estimate of Expenditure is about Rs, 4,400 less than the actuals, Ordinary and Extraordinary, of 1906, after deducting from the latter the extraordinary expenditure on "Repairs," "Materials for a Flora of the Malayan Peninsula," and "Library Catalogue." As last year was the second year in succession in which the Society's expenditure exceeded its income, it has been necessary to estimate the expenditure on a reduced scale. Some of the items, however, show increases. "Salaries" are Rs. 1,000 more, in view of the appointment of an Assistant for the Library, and the increased salaries payable to members of the staff in terms of their agreements. "Printing" is Rs. 300 more, sheets printed in 1906 having still to be paid for. Among the heads which show a decrease are *Journal and Proceedings* and *Memoirs*, and "Books." It is possible to budget for a smaller expenditure on *Journal and Proceedings* and *Memoirs* as fewer bills were outstanding at the close of 1906 than was the case a year ago. "Books" are Rs. 1,000 less. If the revenue comes in better than is expected, it will be possible, if necessary, to pass a supplementary estimate. "Lights and Fans," "Taxes," "Postage" (as a set-off "Freight" is higher), and "Contingencies" are less; and it is hoped it will be possible to keep the expenditure within the estimate.

Extraordinary Receipts and Expenditure have been fixed as follows:—Receipts, Rs. 1,200; Expenditure, Rs. 3,650.

The item on the Receipt side is the sale proceeds of old beams and joists. The amount has already been received.

Seven items appear under the head of Extraordinary Expenditure. Rs. 1,255 have been budgeted for repairs to the Society's building, etc., Rs. 2,000 provided for the new Library Catalogue; Rs. 235 for a Magic Lantern Installation, and Rs. 160 for the Society's subscription to the fund in honour of Professor De Goeje's services in the cause of Arabic learning.

It should be possible to meet the excess of Extraordinary Expenditure over receipts out of the cash balance, and not to have recourse to a further sale of securities.

The expenditure on the Royal Society's Catalogue (including subscription sent to the Central Bureau) has been Rs. 6,268-14-4, while the receipts under this head from subscriptions received on behalf of the Central Bureau (including the grant of Rs. 1,000 from the Government of India) have been Rs. 6,886-2-0. A sum of Rs. 5,494-4-4 has been remitted to the Central Bureau, and Rs. 628-8 10 is still due to them.

On the 24th of April, the Honourable Mr. Justice Asutosh Mukhopadhyaya resigned the Treasurership and Mr. J. A. Chapman was appointed.

BUDGET ESTIMATE FOR 1907.

Receipts.

	1906. Estimate.	1906. Actuals.	1907. Estimate.
	Rs.	Rs.	Rs.
Subscriptions	8,000	10,267	9,000
Sale of Publications ...	800	2,963	2,000
Interest on Investments . .	6,200	6,731	6,450
Rent for Rooms	600	650	600
Government Allowances ...	3,000	3,000	3,000
Miscellaneous	100	76	100
Total ...	18,700	23,687	21,150

Extraordinary Receipts.

Building.			
Sale of old beams and joists			1,200

Expenditure.

	Rs.	Rs.	Rs.
Salaries	4,000	4,243	5,200
Commission	450	556	500
Pension	240	240	240
Stationery	120	166	150
Lights and Fans ...	320	593	320
Municipal Taxes .	1,465	1,610	1,465
Postage	525	876	600
Freight	100	143	250
Meetings	100	97	...
Contingencies ...	650	618	500
Books	2,000	2,000	2,000
Binding	700	700	1,000
"Journal and Proceedings" and "Memoirs"	7,300	7,300	7,500
Printing Circulars, etc. ..	200	280	600
Auditor's Fee ...	100	100	100
Petty Repairs ...	100	8	50
Insurance	313	188	200
Total ...	18,683	19,718	20,675

Extraordinary Expenditure.

	1906. Estimate.	1906. Actuals.	1907. Estimate.
	Rs.	Rs.	Rs.
Library Catalogue ...	1,000	1,600	2,000
Furniture	330	484	...
Illumination .	100	94	...
Books	1,000	1,062	...
Binding	500	244	...
"Journal and Proceedings" and "Memoirs" ...	2,300	5,108	...
Printing "Haji Baba" ...	1,800	1,794	...
Lantern	500	448	...
Renewal of wiring for Electric Lights and Fans for Automobile Association of Bengal ...	155	155	...
Picture Rods ...	288	...	...
Loss on Government Paper sold during the year ...	...	453	...
Magic Lantern Installation	...	..	235
Building	...	7,758	...
Building			
Arches ...	...	...	450
Iron pipes, bends, etc.	...	...	670
Boundary wall	...	...	70
Unfiltered water-supply	...	. .	65
Donation ...	...	. .	160
Total ...	7,973	19,200	3,810

Agencies.

The Agencies are still in the hands of Messrs. Bernard Quaritch and Otto Harrassowitz.

The number of the copies of the *Journal* and *Proceedings* and *Memoirs* sent to Mr. Quaritch, during the year 1906, was 1,312 valued at £199-8-8, and of the *Bibliotheca Indica* 1,142 valued at Rs. 698-8, of which £54-1-4 and Rs. 143-8 worth have been sold.

Twenty invoices of books purchased, and of publications of various Societies sent in exchange, have been received during the year, the value of the books purchased amounting to £64-14-9.

The number of copies of the *Journal* and *Proceedings* and *Memoirs* sent to Mr. Harrassowitz, during 1906, for sale, was 534 valued at £61-15-4, and of the *Bibliotheca Indica* 1,153 valued at Rs. 707. The sale proceeds have been £33-12-9 and

Rs. 685-14 respectively, but the accounts submitted, representing these amounts, have been returned for verification and have not yet been received back.

Library.

The total number of volumes and parts of magazines added to the Library during the year was 2,507, of which 484 were purchased and 2,023 presented or received in exchange for the Society's publications.

The setting up in type of the new edition of the Society's Library Catalogue is completed. Mr. Hari Nath De is engaged in reading the proofs and passing the Catalogue through the press, and, before the close of the year, the Catalogue will be published.

The examination of the Library for the purpose of binding all the books and periodicals in the Society and removing all the periodicals and reports to the ground floor of the building has not yet been completed.

In continuation of the Council order, the Imperial Library has been allowed to borrow books and MSS. from the Society for the use of its readers until further notice.

The Council approved the proposal of the Publication Committee to print the lists of new books added to the Library, twice yearly, instead of monthly, and to issue them separately, instead of with the Proceedings.

Mr. J. H. Elliott has continued Assistant Secretary and Librarian throughout the year.

Royal Society's Regional Bureau for India and Ceylon.

By no means the least important work that the Society carries on is that of Regional Bureau for India and Ceylon in the preparation of the International Catalogue of Scientific Literature. This great scheme has ripened and is bearing good fruit. The Regional Bureau is now worked by a strengthened Committee of twenty-three of our members and has received, from the Government of India, a welcome but necessary grant-in-aid of Rs. 1,000.

Elliott Prize for Scientific Research.

The subject selected for the Elliott Gold Medal for the year 1906 was Natural Science, and only two essays have been received in competition which have been referred to the Trustees for report.

Barclay Memorial Medal.

In order to award the Barclay Memorial Medal for 1907, the following members were appointed to form a "Special Committee" to record their recommendations for the consideration of the Council: Mr. I. H. Burkill, Mr. E. Vredenburg, Rai Bahadur Ram Brahma Sanyal, Captain A. T. Gage, I.M.S., and Lt.-Col. G. F. A. Harris, I.M.S.

Society's Premises and Property.

Messrs. Mackintosh Burn & Co. have substituted steel joists for all the wooden beams on the ground floor. The proposed thorough repairs and structural improvements in the building have been postponed for the present, but repairs to cracks in the walls of the main building caused by changing the beams, and removing earthen roof-spouts and substituting iron pipes have been sanctioned.

At the request of the Calcutta Corporation, certain alterations, in connection with re-modelling the outside latrine arrangements for the menial servants, have been carried out.

In order to make the Society's General Meetings more interesting, a lantern has been purchased which will be worked by electricity.

Exchange of Publications.

During 1906 the Council accepted thirteen applications for exchange of publications, *viz* :—(1) From the Australian Museum, Sydney, the Society's *Journal* and *Proceedings* and *Memoirs* in exchange of their Records. (2) From the Editor of the Journal of Tropical Veterinary Science, Lahore, the Society's *Journal* and *Proceedings* and *Memoirs* for his Journal. (3) From the Director of " Anthropos," (Mödling, Austria), the Society's *Journal* and *Proceedings* and *Memoirs* for his Periodical. (4) From the Missouri Botanical Gardens, St. Louis, the Society's *Journal* and *Proceedings* for their Reports. (5) From the Editor of " Dr. A. Petermann's Geographische Mitheilungen," (Gotha), the Society's *Journal* and *Proceedings* and *Memoirs* for his Periodical. (6) From the Faraday Society, London, the Society's *Journal* and *Proceedings* and *Memoirs* for their Transactions. (7) From the Universitäts-Bibliothek in Basel, the Society's *Journal* and *Proceedings* and *Memoirs* for their Verhandlungen. (8) From École Spéciale des Langues Orientales vivantes, Paris, the Society's *Journal* and *Proceedings* and *Memoirs* for the publication of their School. (9) From the Mining and Geological Institute of India, the Society's *Journal* and *Proceedings* and *Memoirs* for their Transactions. (10) From the Queen's College, Belfast, the Society's *Journal* and *Proceedings* and *Memoirs* for the publications of their College. (11) From the United States National Museum, Washington, the Society's *Journal* and *Proceedings* and *Memoirs* for the publication of the Museum. (12) From the Königliche Gesellschaft für Wissenschaften zu Göttingen, the Society's *Journal* and *Proceedings* and *Memoirs* for their Nachrichten. (13) From the University of California, the Society's *Journal* and *Proceedings* and *Memoirs* for the publications of the University.

Publications.

There were published during the year thirteen numbers of the *Journal* and *Proceedings* (*Journal* and *Proceedings* Nos. 9 to 10 and Extra Number of 1905 and *Journal* and *Proceedings* Nos. 1 to 10 1906) containing 1,106 pages and 11 plates.

Of the *Memoirs* fourteen numbers were published (Vol. 1., Nos. 6, 8 to 19 and Supplement I.) containing 350 pages and 14 plates.

The Numismatic Supplement No. 6 has been published in the *Journal* and *Proceedings*, Vol. I., No. 10 of 1905, under the editorship of the Numismatic Secretary.

There were also published the Index to *Journal* and *Proceedings*, N.S. Vol. I, and a reprint of the Rules of the Society together with revised regulations regarding the submission of communications drawn up by the Sub-Committee appointed for the purpose.

The size of the volume of the *Journal* and *Proceedings* from 1906 has been changed from demy octavo to royal octavo, and, from the present year, 800 copies of each issue of the *Journal* and *Proceedings* and *Memoirs* will be printed instead of 700.

The exchange copies of the Society's publications are now forwarded to the various Societies, &c, through the Society's London and Continental Agents instead of by post.

In February 1906, Mr. J. Macfarlane resigned the General Secretaryship and Lieut-Col. D. C. Phillott was appointed in his place. Dr. E. D. Ross, the Philological Secretary, was absent from Calcutta for seven months, when Mahamahopadhyaya Haraprasad Shastri carried on the duties and edited the Philological Section of the *Journal*. The Coin Cabinet was in charge of Mr. H. Nelson Wright for the first two months of the year, and, for the remainder, by Mr. R. Burn, who also reported on all Treasure Trove Coins sent to the Society. Mahamahopadhyaya Haraprasad Sastri was in charge of *Bibliotheca Indica* and the work of collecting Sanskrit Manuscripts. Dr. E. D. Ross was in charge of the Search for Arabic and Persian MSS. The Natural History Section of the *Journal* was edited by Mr. I. H. Burkill and the Anthropological Section by Dr. N. Annandale. A new section, called the "Medical Section," was added to the Society, and Major F. P. Maynard, I M.S., was appointed its Secretary.

Philology, etc.

The only historical papers in the *Memoirs* are those on the Asrafpur copper plate grants of Devakhadga and the cup-marked inscription in the Chumbi Valley. The former brings to light a local dynasty of four kings in East Bengal in the 8th or 9th century A D., *i.e.*, before the supremacy of the Pal Kings was established. The records speak of the organisation of several Buddhist Monasteries under one supreme head, and gives details about the products of certain plots of land. The Epigraphist, Babu Gangamohan Laskar, was appointed Deputy Magistrate by an appreciative Government, but, unfortunately, his career was cut short by his untimely death. There are also several historical papers in the *Journal*. One of these by Babu Satya Ranjan Roy is entitled "Hājo and his Grandsons," which deals with the history of Kamrup, shortly after the overthrow of the *Khen* dynasty of

Kamtapur, by Husen Shah of Bengal. Babu Jadu Nath Sarkar has written two papers, one on the revenue regulations of Aurangzeb and the other on Shaista Khan. In the former paper he has translated two rare farmans of the Emperor Aurangzeb obtained in a Persian MS. in the Berlin Royal Library. The second paper has been mainly based on the Bodleian Library MS. of the continuation of Shihabuddin Talesh's Fathiyyah-i-ibriyyah. The paper gives an analysis of the continuation and a history of Shaista Khan's civil administration. Babu Rakhal Das Banerji writes an account of the Gurpa Hill in the District of Gaya, which he attempts to identify with the Kukkutapadagiri of the Buddhists. The rock and the pillar inscriptions of Asoka contain many references to animals. Babu Monmohan Chakravarti, in a paper in the *Memoirs*, has attempted to identify these animals. The Umga Hill inscription deciphered by Babu Parameshwar Doyal give the history of a local dynasty in the 13th and the 14th century in the southern portion of the Gaya district. The information supplied by this inscription corroborates that given by Captain Kittoe in the *Journal* of the Asiatic Society in the year 1847. Babu Monmohan Chakravarti has also written two other papers, one on the poet Dhoika who flourished at the court of the last Hindu king of Bengal, Lakshmanasena, and the other on the Sanskrit Literature of Bengal during the Sena Kings. In a paper entitled "Some notes on the Mahipala inscription of Sarnath," Mr. Venis controverts the meanings ascribed to some of the words in the inscription by Mr. J. Ph. Vogel. Especially valuable are contributions made to the *Journal* and *Memoirs* during the past year by Lt Col. D. C. Phillott, dealing with the spoken language of Persia. The study of Persian dialects is a subject which is daily receiving more attention from European scholars, and Col. Phillott's papers—such as "Some Street Cries collected in Persia," "Some Persian Riddles collected from dervishes in the South of Persia," "Persian Saws and Proverbs," and "Some Current Persian Tales" must prove of the utmost value and interest to all students of modern Persian as well as to students of Indian Philology. The articles must also be of considerable interest to folklorists and anthropologists. Col. Phillott also published with the efficient aid of Mr. Azoo a set of stories in the dialect of Hazramaut, forming a valuable addition to a subject which has received the attention of eminent Arabic scholars in Europe It is a matter for congratulation that we find such a marked revival in our publications of interest in the languages of Islam, which, in comparison with Sanskrit, have been sadly neglected in recent years. Among the papers contributed during the year on Tibetan Literature, mention may be made of two read by Mahamahopadhyaya Satis Chandra Vidyabhusana on "Dignaga and his Pramanasamuccaya" and "Indian Logic as preserved in Tibet" in which he has noticed twenty-five Buddhist Sanskrit works to Logic. These works are valuable, as they form connecting links between ancient Hindu Logic of the pre-Christian era and the modern schools of Logic. Rai Sarat Chandra Das, Bahadur, C.I.E., in his paper on "The Origin of mankind according to the Lamaic mythology," traces the origin of men from the fallen angels who used to live on contemplation, but, having acquired an appetite for animal food, were gradually divided into distinct classes. The Rev. A. H. Francke in his *Memoir* on "The Dards at Khalatse on Western Tibet," shows that Khalatse had been a Dard colony before it was conquered and made into a Tibetan village by the West Tibetan King of Ladak about 1150 A.D. The curious beliefs and customs of the Tibetans of the present day are illustrated in the paper on the "Tibetan Almanac" by Mahamahopadhyaya Satis Chandra Vidyabhusana, M.A. The curiosity aroused in Tibetan matters by the British Mission to Tibet of 1903–04 has brought forth several interesting papers such as the *Memoir* on "A cup-mark inscription" and the paper on "An old form of elective Government in the Chumbi Valley" by Mr. E. H. C. Walsh, I.C.S., and also the paper on "Gyantse Rock Inscription" by Mahamahopadhyaya Satis Chandra Vidyabhusana. Mr. Walsh, who visited the Chumbi Valley, in connection with the Tibet Mission, discovers cup-mark inscriptions in a part of the world in which they have not hitherto been known to exist. In his second paper, Mr. Walsh attempts to prove that, in ancient times, the Chumbi Valley formed practically an independent republic, whose leader derived his authority from the presiding deity of the place, and that the people of the valley, called the Tromowas, do not belong to the same stock as the Tibetans. Mahamahopadhyaya Satis Chandra Vidyabhusana's paper on the "Gyantse Rock Inscription" is compiled from an inscription on a piece of rock brought from the Gyantse Jong by the late Tibet Mission. It describes Gyantse as a splendid dominion and gives some account of its King Choigyal-rab-ten, who founded the fort and monastery there in the 14th century A.D.

At the suggestion of Dr. Ross, the Council has sanctioned ten guineas to the fund that is being raised in honour of Professor M J. De Goeje for his brilliant services in the cause of Arabic learning.

Natural History, etc.

The Society has exhibited renewed vigour as regards zoology during the year. This has been owing to two causes, firstly, that several distinguished authorities in Europe have allowed their papers to be printed in the Society's *Journal*, and, secondly, that the intimate relations which have always existed between the Society and the Indian Museum have been fully maintained. Out of twenty-nine zoological papers published in the *Journal* twenty-three (as well as the three zoological *Memoirs* issued) have either been the result of work done in the Museum or else have dealt with specimens in the Museum; three zoological papers have been contributed by our General Secretary, one by the scientific officers of a commercial institution, and only one by a native of India. This means to say that the zoological work of the Society is very largely in the hands of professional and official zoologists who may, at any time, be called upon to publish their researches departmentally. In India, where there are so few professional zoologists, this state of affairs is not satisfactory as it would be in Europe or America, where every university and biological institution has its zoological staff, and it is quite possible that the Society will be obliged to fall back, as far as this branch of its activities is concerned, on amateur support in the future. The majority of the papers published during the year have dealt with Indian representative of group of animals little studied in India hitherto. Dr. von Linstow of Göttingen has written several short papers on parasitic worms (two of which represent new genera) sent him by the Indian Museum; Mr. G. A. Boulenger, F.R.S., and Mr. Tate Regan, both of the British Museum, have described new frogs and fishes from the same source; Mr. M. Burr has annotated a collection of earwigs belonging to the Museum and Mr R. Gurney one of Entomostracous Crustacea; Mr. C. A. Paiva, Assistant to the Museum, has written notes on other families of insects, and Captain F. Wall, I.M S., has published a descriptive Catalogue of the sea-snakes in the Collection, Mr. A. T. Aiyar, an assistant in the Pusa Agricultural Institute, having also contributed bionomical notes on the same group. Dr. H. Mann has worked out the varying numerical proportions of the sexes, under different conditions, in the cases of the "Mosquito Blight" of tea. Dr. N. Annandale, offg. Superintendent of the Indian Museum, has contributed to the *Journal* a series of short papers and one longer one on investigations concerning the freshwaters of India, especially the Calcutta tanks, as well as a Memoir on the fauna of a desert tract in Southern India, while Lieut. Col. D. C. Phillott has commenced a series of notes dealing with the animals and birds used in hunting in the East. Thirteen botanical papers have been read before the Society during the year, and two botanical exhibits made in addition. By the date of the Annual Meeting all the thirteen papers will have been published. Among these papers and exhibits is one by Mr. Jogesh Chandra Ray on the Hindu method of manufacturing Rice spirit, which adds to our knowledge of fermentation by means of mould-fungi. From an examination of the wort taken at different seasons the author prepared tables giving the yield of alcohol and volatile acids, and concluded by summarising the best conditions under which rice fermentation may be conducted in this country. Mr. Hooper's two contributions turn on industrial uses of plants; one call attention to the use of a wild Indian Nutmeg for the manufacture of candles, the other to the use of a vegetable pulp for the making of vessels for holding water, ghi, etc. A contribution by Mr. I. H. Burkill discusses cases of the parasitism of one mistletoe upon another Three of the remaining papers deal with flower-fertilisation, among which is one upon the flower of the Jute plant—a part of investigations in progress in India for the improvement of the Jute crop. Lastly, there are seven papers on Systematic Botany, two of them being by Captain A. T. Gage and two of them coming to the Society from England: together they add to the flora of British India 17 species, to the flora of Thibet 9 species, to the flora of China 12 species and to the flora of Japan 2 species. Our contributors across the sea were Dr. O. Stapf of Kew and Mr. Spencer Moore of the British Museum of Natural History, South Kensington. Under the section of Chemistry three papers have been contributed by members. In a paper on Silver dioxide and silver peroxynite, Prof. E. R. Watson, of Sibpur, deals with the composition of the black crystalline substance found at the anode during the electrolysis of aqueous solutions of silver nitrate. The author explains the formation of the compound and gives analyses of the salt obtained under varying conditions. The milk of the Indian buffalo has also been the subject of an investigation by Prof. Watson. The nature of the milk-sugar and the constitution of the butter-fat were the main points of the enquiry, and the results are not only of importance to scientific agriculture, but will enable the analyst, in future, to differentiate between buffalo's and cow's milk. The third paper is that of Mr. J. C. Ray, mentioned above. In the *Memoirs* an article has appeared on the remarkable habit of earth-eating in India, written by Messrs. Hooper and Mann. Although this subject is of anthropological interest, the authors have taken the trouble to chemically analyse thirty-two samples of the material usually resorted to by mud-eaters in all parts of the country. The specimens were all of mineral origin and contained large quantities of silica, and were, as a consequence, devoid of the usual elements of nutrition found in ordinary human food.

At the suggestion of Major L. Rogers, I.M.S., a new section, called the "Medical Section," was added to the Society, and Major F. P. Maynard, I.M.S., was appointed its Secretary. The reason for the addition is that Medical Members have no organization permitting their meeting to discuss subjects of special medical interest. The recommendations approved by the Council are as follows: —

1. "That there be created a new section to be called the 'Medical Section.'
2. "That a sectional Secretary be appointed by the Council under Rule 51, who shall be an ex-officio member of the Publication Committee.
3. "That all business connected with papers of the Medical Section be submitted, in the first instance, to the Publication Committee.
4. "That papers of a purely technical nature, which are unsuitable for a General Meeting, be read at an adjourned meeting. Neither these papers nor their authors shall be mentioned by name in the Society's circulars, but shall be duly announced from the chair "at the time of adjournment."

Anthropology, etc.

A considerable number of ethnographical papers has been published in the *Journal* and the *Memoirs* of the Society. The majority have been primarily of local interest and there is unfortunately still a tendency, so far as the Society is concerned, to regard all branches of anthropology except the purely physical, which has not been represented during the year, as being within the range of intelligent observation unattended by library research. It is impossible for the Secretary to scrutinize every detail in every paper submitted to him, and it is undesirable that he should do so; but it is to be feared that much of the material published by the Society is not new in the sense of being hitherto unpublished; not because the authors are conscious plagiarists, but because they take it for granted that they are the first workers in the fields they exploit. Little as we know of Indian anthropology, repetition of authentic observation tends to obscure rather than to elucidate the points at issue. If anthropology is a science, it is just as impossible to write a scientific ethnographical paper without previous study as it would be to write one on chemistry or botany. These remarks fortunately do not refer to all the papers issued recently by the Society, for, in some few, a wider survey has been taken than is in the immediate sight of a man whose knowledge is merely local, but it would be invidious to single out individual instances. The project referred to in last year's report of issuing figures and descriptions of Indian and other weapons, implements and the like, has so far borne fruit that a short supplement to the *Memoirs* has been issued with three plates, and another is in the press; but the stress of official work has prevented the Anthropological Secretary from paying as much attention to the matter as he would have wished, and no other member of the Society, except the Reporter on Economic Products, our Natural History Secretary, has as yet shown any interest in the matter.

Coins.

During 1906 the number of coins presented to the Society was 7 gold, 74 silver and 10 copper, which may be briefly classified as shown below:—

		AV	AR	Æ
Mediæval India ...	Gadhaiya coins ...		4	
	South Indian ...	1		
Independent Bengal ..	Rukn-ud-din Kaikaus ...		1	
Bahmani ...	Taj-ud-din Firoz ...		1	
Malwa			4	
Qutb Shahi ...	Abdullah (zana) Shah -			3
Mughal - ...	Akbar		2	4
	Shah Jahan ...		12	1
	Murad Bakhsh ...		1	
	Carried over ...	1	25	8

		AV	AR	Æ
	Brought forward	1	25	8
Mughal—*contd.*	Aurangzeb	1	7	1
	Shah Alam Bahadur	1	2	
	Farrukh Siyar		2	
	Jahandar		1	
	Muhammad Shah	1	8	
	Alamgir II	1	4	
	Ahmad Shah Bahadur		10	
	Shah Alam II	1	2	
	Doubtful Mughal			1
Hyderabad			1	
Sikh			12	
Ottoman Sultans	Murad III	1		
		7	74	10

The most important of these is a gold coin of Aurangzeb of the Zafarabad mint, which appears to be unpublished. The copper coins of the last Qutb Shahi ruler, though said to be common, have not been fully described.

The post of Numismatic Secretary was held, for the first two months of the year, by Mr. Nelson Wright, and, for the remainder, by Mr. R. Burn. The number of coins examined as Treasure Trove was 8,060, and with the exception of a few cases, which had not been disposed of before the appointment of a special Numismatic Secretary, this branch of the Society's work is now up to date. Notes have been kept of the more important finds, and will be published in the Numismatic Supplement to the *Journal.*

Bibliotheca Indica.

Want of funds prevented the publications of even normal number of fasciculi during the year under review. While 42 numbers were issued in 1904, 36 in 1905, only 14 have been issued during the year under review.

The activity of previous years has been followed by the inactivity of the present year. No new work has been commenced The only work that has been finished is the edition of the Aitareya Brahmana by Acharya Satyavrata Samasrami, with Sayaracarya's commentary, in four volumes. The three fasc. issued during the year under review contain the preface to the whole work. It is not what is ordinarily termed preface, but is an independent treatise on the history, bibliography, scope and object of Aitareya, which is regarded by European scholars as second only in antiquity to the Rigveda. All that could be possibly done with limited means has been done, and the Government of Bengal has sanctioned a special grant of Rs 3,000 for continuing the translation of the Akbarnama. An application has also been made to the Government of India for a special grant for the publication of a translation of the Maasir-ul-Umara. The supervision of the Bibliotheca publication was in the hands of Mahamahopadhyaya Haraprasad Shastri, Joint Philological Secretary to the Society.

The Council approved new rules for remunerating Editors and Translators in the Bibliotheca Indica framed by the Philological Committee.

Under Council order, the copyright of a number of Bibliotheca Indica was registered.

Search for Sanskrit Manuscripts.

A Catalogue of palm leaf and selected paper manuscripts, belonging to the Durbar Library, Nepal, was published by the Asiatic Society of Bengal in 1905. In 1906, Sir Andrew Fraser, as President of the Society, presented copies of the work to the Nepal Durbar. The Durbar has responded to this act of courtesy by sending a list of new collections in its library. The Council of the Asiatic Society of Bengal have resolved to publish this list as an appendix to the 3rd volume of the Notices of Sanskrit MSS. about to be issued. The new collection at Nepal contains the names of some unique MSS. An examination of this by an expert would be of great value. During the year under review there has been printed, and all but published, a volume of Notices of Sanskrit MSS. containing descriptions of 366 MSS examined, mostly in Benares and Behar. Some very rare works of the Madhvya sect have been described, but the most noticeable feature of the volume consists of the notices of a large number of Jaina MSS. The number of MSS. acquired during the year is 96. Of these the Muktavali Prakash, a work on Nyaya, is unique. The Sudarsana Sataka is known only by name. A large portion of the Sabdanushasana Vritti, by the Jaina Pandit Hemachandra of the 12th century, with some of its subsidiary works, has been acquired. A medical work entitled Bhishakchakrachittotsava known from Kashinath's list has been purchased. The search for Sanskrit MSS. in Bengal is being kept up with its former vigour. Professor Hillebrandt of Breslau writing under date, 2nd December, 1906, congratulates Shastri, who is in charge, on his successful work.

A report on the search of Sanskrit MSS for the years 1901—1902 to 1905—06 was submitted to the Government of Bengal, and, in reply, the Government has sanctioned the continuance of the annual grant of Rs. 3,200, in aid of the operation in search of Sanskrit MSS. in Bengal, for a further period of five years from 18th April 1906.

Search for Arabic and Persian MSS.

During the year under review, the search has been conducted by Dr. Ross, and many valuable additions have been made to the collection of Arabic and Persian Manuscripts. The total number of MSS. purchased for the Society was upwards of 400, and the collection is representative of almost every branch of literature. The most important feature of the recent acquisition is a collection of about 100 works dealing with the Imamite traditions and law, by such old and modern authors as Ibn Babwaih, Ibn Tá'ús, Mír Báqir Damád and Muhammad Báqir Majlisi. Many of these manuscripts represent works of great importance in the history of Muhammadan dogma, which have hitherto been unknown to scholars. The oldest manuscript in point of date, which had recently been purchased, is the Musír al bhirám as Sákni ila ashraf al amákni by Ibn Towzí; this bears the date of A.H. 578 (A.D. 1182). About 80 MSS. date between the 13th and 16th centuries of our era. Eleven of them are autograph copies, among which may be cited the following: Qiyám al Layl, by Abul 'Abbas Ahmad bin' Ali al-Maqrízi (died A.H. 845, A.D. 1442) dated A.H. 807 A.D. 1404, and Aswáqalashwaq fí masári' al ushsháq by Bushán ud Dín Abul Hasan Ibráhim bin 'umar al Biqá'í ash-Shafi'í (died A.H. 885, A.D. 1480) which is dated A.H. 824 (A.D. 1421). In response to an application made by the Society, the Government of India has agreed to place at the immediate disposal of the Society the sum of Rs. 5,000 for the purchase of Arabic and Persian MSS. instead of in the fifth year of the grant. The second annual report for the official year 1905–06 was submitted to Government and published in the *Proceedings* for April 1906.

Bardic Chronicles.

The work of instituting a search for MSS. of Rajput and other Bardic Chronicles and making a preliminary survey, for which the Government of India has granted a sum of Rs. 2,400 for the first year, has not yet begun. The Nagari-pracharini Sabha has been asked if it is willing to undertake the work under the supervision of Major C B. Baldock, 44th Marwara Infantry.

The Report having been read, and some copies having been distributed, His Honour Sir Andrew Fraser, K.C.S.I., President of the Society, delivered the following Address.

Annual Address, 1906.

I desire first of all to thank you very heartily for the honour which you conferred upon me two years ago in electing me to be the President of the Society The life of the Lieutenant-Governor of Bengal is undoubtedly one full of occupation; and it is not a life which can be characterised to any extent by the exalted pleasures of study and research. Many of his hours are occupied with petty details of business, and some with serious and sometimes anxious affairs of State; and many of them are occupied with engagements which, even when they appear to be of a pleasant or perhaps somewhat frivolous character, are nevertheless entirely obligatory and unavoidable. These latter sometimes seem to make as great a demand on the vigour and time of the Lieutenant-Governor, as do the duties which appear more responsible and onerous. It has not been easy, therefore, for me to give that attention which I should have liked to have given to the work of the Asiatic Society of Bengal. I have been able to attend with pleasure and profit a good number of the meetings; but I have not been able to do, either in this respect or in some other respects, what I should have liked to have done. I was courteously invited the other day to remain, in some capacity or other, an officer of the Society; but I have felt it my duty to decline that further honour, not because I have no interest in the work of the Society, but because my interest in it is too real to allow me to sacrifice it to my own gratification. There are others who can better perform the duties attaching to office in connection with this Society; and I am very willing to leave the honour as well as the work to them; and I trust that my interest in the Society's welfare will not be considered the less on that account. I remain a member of the Society; and if at any time I can show my interest in its concerns, I trust that you will command me. Again I thank you for the honour conferred on me in bestowing on me the office which I have this evening to vacate. Although I cannot claim to have discharged its duties even in any degree to my own satisfaction, yet I shall always look back upon my tenure of this office with pride and pleasure, and with a sense of gratitude for the consideration shown to me by the members of the Society.

Last year I was unable to be present at the Annual Meeting owing to my absence from Calcutta on a tour in Bihar with His Excellency the Viceroy. As you are aware, the rules of the Society have fixed the date of the Annual Meeting; and it was impossible for me to be present in Calcutta on that date. My learned friend, the Hon'ble Mr. Justice Ashutosh Mukerji, kindly took my place and delivered the annual address. I am in one respect not quite so happy this year. Last year the first Wednesday in February found me in restful and hopeful expectation of reading the interesting and able address which was being delivered on my behalf in Calcutta. This year I have to speak for myself. I do not, however, intend to detain you with a long address. There has now been in existence for several years an excellent arrangement, that the report should be prepared by the Secretaries of each section who are well fitted to explain what has been done in the various departments of the Society's work. This relieves the President of the serious responsibility of endeavouring to expound to experts in the various branches of the work of the Society, matters in respect of at least many of which he must, under the most favourable circumstances, be only an amateur. It is an arrangement of which I shall certainly take full advantage; for I feel quite unable to discuss effectively before this audience the work of the year. The report prepared by the General Secretary from the reports of the Secretaries of sections has been placed before you, and is in your hands. I shall leave it to speak for itself.

The report records the death of four Ordinary Members and one Associate. One of these, Mr. J. Macfarlane, was the Honorary Secretary of the Society. As Librarian of the Imperial Library, Mr Macfarlane had shown an unfailing courtesy, a deep interest in his work, a sense of duty and a desire to help the public in every way possible, which had earned for him widespread popularity. In this Society also, as Secretary, he had shown himself most painstaking and considerate; he did good work for us; and his advice in regard to library matters was especially valuable. I am sure, gentlemen, that you would desire me to give expression to our great regret at Mr. Macfarlane's early death, and our deep sympathy with his young wife in her sore bereavement.

I congratulate the Society on the marked increase in its membership during the last two years. In 1901 the total number of paying members was 269. In 1904 it was 276; during the same period the non-paying membership rose from 59 to 67. In 1905 the paying membership had risen to 283, and in 1906 to 335—the total membership having risen from 343 in 1904 to 407 in 1906, the net actual increase during the year 1906 itself being 50 members. This is surely very satisfactory. At the same time I cannot help feeling that there are men who ought to be members of this Society and are not. A very large number of those who come to India or who are employed in this country, are educated men who ought to be interested in such subjects as engage the attention of this Society. More than that, their work is of such a character that it would be greatly improved if they gave themselves to the study of such subjects.

Take for example my own service. Surely a member of that service may be expected to be deeply interested in the differentiation of races, and in the study of their languages, of their history and antiquities, and even more of their present customs and characteristics. Surely such study must be of the greatest interest; and surely it would be of great profit to any man of education destined either for judicial or executive work in this country. I most certainly do not think that proficiency in Indian languages alone ought to be regarded as an adequate claim to advancement in the public service. It is a serious blunder to promote men with a turn for study and a facility for passing examinations to situations for which they are otherwise unfit But I most certainly do think that a knowledge of the language of the people is essential for that free intercourse with them by which alone can be acquired that knowledge of their customs, characteristics and feelings, the importance of which cannot be overstated. We hear a great deal at the present time about the power of sympathy in government and in the intercourse between races. I believe that power to be incalculable But sympathy, if partly a quality of the heart, is also an attribute of the mind. It is at least partly informed. To put myself in another's place, and so to be in a position to treat him as I should like to be treated if in his place, I must understand him. I must know something about his history, about his environment, about what he is. Anything that advances this knowledge is worth encouraging.

I am bound to say therefore that it is somewhat disappointing to find that the Asiatic Society of Bengal has enrolled among its members so few officers of my own and other services. It is a great pleasure to me to find among the members several of my own officers in the Imperial and Provincial Services, and to find that some of these are doing work which is noticed in our reports. But they are far too few. I think that it is not altogether the fault of the officers themselves. I think it is partly due to the fact that the Society does not sufficiently make itself known. I am inclined to think that the enlisting of a large number of enthusiastic workmen in the various branches of Indian work as members of this Society is an object well wo th aiming at. It would not only be an advantage to the Society, and perhaps it might not always be even an unmixed advantage; but it would certainly be a great advantage to such enthusiastic workers themselves to belong to a Society like this. Now I know from my own experience that a young man may come to this country very anxious indeed to learn something about the people he meets, the places he works in, and the things he sees. When he is young and fresh to the country, if he is also enthusiastic, he marks and notices the special features of the life and surroundings into which he is brought. If he could be encouraged to record these, to study them scientifically and to assimilate them in a healthy way, it would be of great advantage. And I cannot help thinking that membership of a society like this might tend to much advantage in this respect. On the other hand it is also a mere matter of memory that the advantage of membership of this Society was denied to me, simply because the objects, if not also the very existence, of the Society were practically unknown in the province to which I belonged. Often and often customs had to be enquired into in the ordinary course of business. Mythological tales and religious legends were rehearsed by priests at remote shrines. Quaint stories were told by the light of the camp fire. Beautiful or curious family or caste observances were witnessed. These and many other interesting experiences made their impression on one's heart and mind. But I cannot help feeling that that impression would have been less vague, and often less ephemeral and more useful, if there had been encouragement systematically to record and scientifically to consider such experiences.

I observe in the report that in the Anthropological section Dr. Annandale animadverts on the tendency "to regard all branches of anthropology, except the purely physical, as being within the range of intelligent observation unattended by library research." I am prepared to admit that if every enthusiastic observer were to record every observation that he made in the course of work and of tours in the interior of the country, he would produce a mass of material, which, however interesting to himself and interesting to many others, would not be scientifically new, and might not elucidate points at issue among scientific men. And I am quite prepared to admit that the Secretary in this department cannot be expected to scrutinise every detail in the papers submitted to him, and that it is not desirable that he should do so. But I am sure that the influence of this Society ought to be used to encourage such work, and that such encouragement would be of enormous advantage to the students themselves. At the same time I think that a great deal of interesting and even valuable material is lost, because the interest of men in the interior is not enlisted by this Society on behalf of scientific research. I think it might be possible to do something in this direction.

It seems to me that it might be possible for the Government and this Society to co-operate in regard to this matter. It will undoubtedly be admitted that it is the interest of the Society to encourage observation and research, to make some effort to direct and stimulate any man of inquisitive and acquisitive mind in the pursuit of such knowledge as I have indicated. It is not less in the interest of Government. Knowledge of this kind acquired by personal intercourse with the people, assisted bey study of the literature on the subject, would be of great benefit to our officers.

I confess that it is a cause of great regret to me to find that the study of the vernacular and the cultivation of intimate personal relations with the people of the country seem to be less common and effective now than formerly. I certainly do not expect to find at the present time the widespread enthusiasm about the acquisition of knowledge on Indian subjects which we had in the olden days. Circumstances have very greatly changed. The Indian world is not so strange and unknown a world as it was. There are still features and characteristics of Indian life as strange as ever; but they are not so obtrusive and so near the surface as they used to be. We have brought a great deal of the life of the West to the East. There are many men who spend a lifetime in India and yet know as little of what is purely oriental as if they had lived all their time in London. The fact that this is possible decreases the sense of necessity of acquiring a real knowledge of the people.

If one talks of carrying on the business of a Local Board in vernacular, he is told at once that, though some of the Indian gentlemen who are members of the Board would no doubt understand the business better if it were carried on in vernacular, the majority would probably regard it as anything but a compliment to be asked to conduct it in any language but English. A fact like that explains how the necessity for mastering the vernacular is not so strongly felt now as it once was. When I came to the country we had to conduct our municipal work in vernacular: few young Assistants could do it now. And this is only one instance of the operation of forces which affect the whole life of the country. In regard to customs and manners it is very much the same. We may desire to show respect to the old customs; but we find perhaps that the man whose customs we desire to respect would rather that we would show him our own so that he might adopt them.

I believe no doubt that there are other causes at work. Men perhaps stand more aloof owing to the prevalence of mere officialism. They know less of the people, because they are so much confined to their offices. They have also been brought by the improvement of communication too near England to settle down in India among the people as they used to do. Again, on the one hand they have in India their English home and their English club; and on the other hand the Indians nearest to them have acquired the English language and much of the English way of thinking and of English manners. All these causes and many others undoubtedly tend to what I believe to be a fact, namely that there is less knowledge of the vernaculars and of the customs of the people on the part of our officers than there used to be. But I believe that perhaps the principal cause is, that in the ordinary work of the Government official he has to do with a class of people who, by their education and training, have, as far as at least their outer life is concerned, drawn much nearer to the West. It is possible to get through one's office work without much knowledge of either the language or customs of the people. All the same (however one may explain these facts) it remains true that, as far as the great body of the people are concerned, you cannot get into close touch with men without a knowledge of the vernacular and a knowledge of their customs and characteristics which personal intercourse accompanied by intelligent study alone will give. I think that it would be well worth while for Government to co-operate with this Society in endeavouring to encourage such knowledge.

The consequences of ignorance of or indifference to the customs of the people have often in our history been most serious. We in Bengal know how ignorance of Santhal history and customs led to great disaster Only the other day I found in Ranchi that a complete indifference to the customs of the Mundas was leading to universal discontent among them. It was not until the Judicial Commissioner (an officer whose high legal reputation made it safe for him to express a belief in equity) secured the co-operation of the Courts with the Settlement Department in the endeavour to ascertain these customs, that the people began to get their rights. These extreme cases are only very clear illustrations of what goes on everywhere. Ignorance of the people, wherever it exists among judicial and executive officers, leads to misunderstanding and wrong. I feel that it is the interest of Government to encourage among its officers such work as is done by this Society.

I do not propose at the present time to show how this might best be done. But I think that it might be possible to work out a practical scheme for doing something in this direction. The Society has now one or two members at least in most parts not only of this province but also of those other provinces which might reasonably be influenced by the Asiatic Society of Bengal.

Government has at the time officers engaged in such enquiries and researches as are within the scope of this Society. We have educational officers engaged in the study of the languages of India, archæological officers engaged in the study of its antiquities, scientific officers concerned in its natural history, botany and cognate subjects, Superintendents of Ethnography concerned with Anthropology, and the like. Now, if some of these were enlisted as members of the Society, they might become, as it were, agents to assist the Society in directing and encouraging research among enthusiastic officers of enquiring mind, who might be recruited young to our membership. I should be very glad, if it were possible, to devise some system for improvement in this respect. If the Society would appoint a Committee to consider the matter it would no doubt find some of its members in the service of the Government of India, like my distinguished friend Sir Herbert Risley, ready to represent Government on such a Committee; and there might perhaps be some definite and appreciable result. I should like to see many of our officers enlisted as members of the Society, and some arrangement made to give them local guidance in their researches.

What I have said has been mainly concerned with my own service and with European officers. This is due to the fact that one speaks best of what he knows best. But I am far from confining my observations to my own service or to my own race. Any one who has studied the subject knows that my remarks are of the widest application. The evil resulting from ignorance of the people in those who work among them is as much seen among other services and occupations as in my service; and it is seen among Indians as well as among Europeans. In the Ranchi case, to which I have just referred, the officers who ignored the customs of the Mundas were for the most part Indians. There are many Indian gentlemen who might be encouraged in the course of their duties, whether official or non-official, to take up some interesting subject of enquiry and research in regard to their own people and their own country. I believe that this is very desirable. There are causes in operation which tend to prevent men from devoting themselves to such researches and anything that can be done to encourage them to overcome the operation of these obstructive forces would be of great advantage.

Gentlemen, I have said that I shall leave the report of the year's work to speak for itself. I have already occupied your time as long as I ought to do; and I do not think that there is anything to be gained by my endeavouring to say over again what the report has said, briefly enough but clearly and much better than I can say it, under each section of the Society's work. I congratulate the Society on a fair record of work; I congratulate you on the formation of a medical section during the year; I congratulate you also, on the whole, on the financial position; and there is one thing which has struck me in connection with what I have seen of the work of the Society during my

two years of office upon which I congratulate you still more, that is the earnestness and zeal which characterises your office bearers generally and not a few of the members of the Society. I may also mention as a special subject of congratulation the completion of our Library Catalogue, the publication of which is eagerly awaited. Again I thank you for calling me to the honourable office which I now hand over to my learned friend Mr. Justice Ashutosh Mukerji, whom you have chosen to be my successor. I have only to repeat that I am glad that my resignation of office does not mean that I cease to be a member of the Society; and I trust that if at any time I can advance its interests you will command me.

The President announced that the scrutineers reported the result of the election of Officers and Members of Council to be as follows:—

President.

The Hon. Mr. Justice Asutosh Mukhopādhyāya, M.A., D.L., F.R.S.E.

Vice-Presidents.

T. H. Holland, Esq., F.G.S., F.R.S.
Dr. G. Thibaut, Ph.D.
Mahāmahopādhyāya Haraprasād Shastri, M.A.

Secretary and Treasurer.

General Secretary :—Lieut.-Colonel D. C. Phillott.
Treasurer :—J. A. Chapman, Esq.

Additional Secretaries.

Philological Secretary :—Lieut.-Colonel D. C. Phillott.
Natural History Secretary :—I. H. Burkill, Esq., M A.
Anthropological Secretary :—N. Annandale, Esq., D.Sc., C.M.Z.S.
Joint Philological Secretary :—Mahāmahopādhyāya Satis Chandra Vidyābhuṣaṇa, M.A.
Medical Secretary :—Major F. P. Maynard, I M.S.

Other Members of Council.

W. K. Dods, Esq.
H. H. Hayden, Esq., B.A., F.G.S.
C. Little, Esq., M.A.
Hari Nath De, Esq., M.A.
J. A. Cunningham, Esq., B.A.

Major O'Kinealy showed specimens of Rhinosporidium Kinealyi and read notes on "Membranous tonsillitis in a case of plague" and on "Unilateral fibrinous rhinitis."

Lt.-Col. E. Harold Brown read a paper on "Cerebrospinal meningitis."

The discussion on the last paper to be continued at the next meeting.

LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL.

ON THE 31ST DECEMBER, 1906.

LIST OF OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL FOR THE YEAR 1906.

President :

His Honour Sir A. H. L. Fraser, M.A., LL.D., K.C.S.I.

Vice-Presidents :

The Hon'ble Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.
T. H. Holland, Esq., F.G.S., F.R.S.
A. Earle, Esq., I.C.S.

Secretary and Treasurer.

Honorary General Secretary : Lieut.-Colonel D. C. Phillott.
J. A. Chapman, Esq

Additional Secretaries.

Philological Secretary : E. D. Ross, Esq., Ph.D.
Natural History Secretary : I. H. Burkill, Esq., M.A.
Anthropological Secretary: N. Annandale, Esq., D.Sc., C.M.Z.S.
Joint Philological Secretary : Mahāmāhopādhyāya Haraprasād Shastri, M.A.
Medical Secretary : Major F. P. Maynard, I.M.S.

Other Members of Council.

W. K. Dods, Esq.
H. H. Hayden, Esq., B.A., F.G.S.
E. Thornton, Esq., F.R.I.B.A.
Mahāmāhopādhyāya, Satis Chandra Vidyabhusana, M.A.
C. Little, Esq., M.A.
Hari Nath De, Esq., M.A.
J. A. Cunningham, Esq., B.A.
Major W. J. Buchanan, I.M.S.

LIST OF ORDINARY MEMBERS.

R. = **Resident.** **N.R.** = **Non-Resident.** **A.** = **Absent.** **N.S.** = **Non-Subscribing.**
L.M. = **Life Member.** **F.M.** = **Foreign Member.**

N.B.—**Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the Honorary General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Honorary General Secretary.**

Members who are about to leave India and do not intend to return are particularly requested to notify to the Honorary General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1903 Feb. 4.	N.R.	Abdul Alim, Sayyad. *Bankura.*
1894 Sept. 27.	N.R.	Abdul Wali, Maulavi, Special Sub-Registrar. *Ranchi.*
1895 May 1.	R.	Abdus Salam, Maulavi, M.A., Presidency Magistrate. *Calcutta.*
1901 April 3.	N.R.	Abhaya Sankar Guha, Deputy Magistrate and Deputy Collector. *Chittagong.*
1903 April 1.	N R.	Abul Aas, Maulavi Sayid. *Patna City.*
1901 Aug. 7.	A.	Adams, Margaret. *Europe.*
1904 Sept. 28.	N.R.	Ahmad Hasain Khan, Munshi. *Jhelum.*
1888 April 4.	R.	Ahmud, Shams-ul-Ulama Maulavi. 3, *Maulvi's Lane, Calcutta.*
1898 Nov. 2.	N.R.	Akshaya Kumar Maitra, B.A., B.L. *Rajshahi.*
1885 Mar. 4.	L M.	Ali Bilgrani, Sayid, B.A., A.R.S.M., F.G.S. *Chudderghaut, Hyderabad.*
1899 Jan. 4.	N.R.	Ali Hussain Khan, Nawab. *Lucknow.*
1903 Oct. 28.	R.	Allan, Dr. A. S., M.B. 9, *Dalhousie Square, Calcutta.*
1900 Aug. 1.	R.	Allen, The Hon'ble Mr. Charles George Hillersden, I.C.S., Chairman to the Corporation. *Calcutta.*
1902 Feb. 5.	N.R.	Ambica Churan Sen, I.C.S., District and Sessions Judge. *Rajshahi.*
1874 June 3.	A.	Ameer Ali, M.A., C.I.E., Barrister-at-Law. *Europe.*
1898 Feb. 2.	R.	Amrita Lal Bose, Dramatist. 9-2, *Ram Chundra Maitra's Lane, Calcutta.*
1897 Jan. 6.	R.	Amrita Lal Sircar, Dr., F.C.S. 51, *Sankaritolla Lane, Calcutta.*

Date of Election.		
1905 July 5.	R.	Amulya Charan Ghosh Vidyabhusana, 66, *Manicktolla Street, Calcutta.*
1893 Aug. 31.	N.R.	Anderson, Major Adam Rivers Steele, B A., M.B., D.P.H., C.M.Z.S. I.M.S., Civil Surgeon. *Rajshahi.*
1884 Sept. 3.	A.	Anderson, J. A. *Europe.*
1897 June 2.	R.	Annada Prasad Bose, M.A., Deputy Magistrate and Deputy Collector. *Serampore.*
1904 Sept. 28.	R.	Annandale, Nelson, D.SC., C.M.Z.S., Officiating Superintendent, Indian Museum. *Calcutta.*
1904 Jan. 6.	A.	Ashton, R. P. *Europe.*
1886 May 5.	R.	Asutosh Mukhopadhyaya, The Hon'ble Mr. Justice, M.A., D.L., F.R.A.S., F.R.S.E.; Judge, High Court. *Calcutta.*
1902 Aug. 27.	R.	Ashutosh Chaudhuri, Barrister-at-Law. 39, *Old Ballygunge, Calcutta.*
1904 July 6.	N.R.	Aulad Hasan, Sayid. Inspector of Registration. *Shillong.*
1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. *Ferlys Lodge, 29, Banbury Road, Oxford, England.*
1901 Jan. 2.	A.	Badshah, Kavasjee Jamasjee, B.A., I.C.S. *Europe.*
1898 Nov. 2.	A.	Bailey, The Revd. Thomas Grahame, M.A., B.D. *Europe.*
1891 Mar. 4.	N.R.	Baillie, Duncan Colvin, I.C.S., Commissioner. *Benares.*
1900 Aug. 29.	R.	Baker, The Hon. Mr. Edward Norman, C.S.I., I.C.S., Finance Member, Govt. of India. *Calcutta.*
1891 Feb. 4.	N.R.	Ban Behari Kapur, Raja, C.S.I. *Burdwan.*
1893 Sept. 28.	R.	Banawari Lala Chaudhuri, B.SC., Edin. 120, *Lower Circular Road, Calcutta.*
1869 Dec 1.	L.M.	Barker, Robert Arnold, M.D., F.G.S. *Fairfield, Oxford Road, Reading, Berkshire, England.*
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, M.A., I.C.S., Magistrate and Collector, *Shillong.*
1902 May 7.	A.	Bartlett, E. W. J. *Europe.*
1895 July 3.	L.M.	Beatson-Bell, Nicholas Dodd, B.A., C.I.E., I.C.S., Director of Land Records and Agriculture, Eastern Bengal and Assam. *Shillong.*
1906 Nov. 7.	N.R.	Bergtheil, Cyril. *Sirsiah, Mozafferpur.*
1876 Nov. 15.	F.M.	Beveridge, Henry, I.C.S. (retired). *Pitfold, Shottermill, Haslemere, Surrey, England.*
1903 Feb. 4.	N.R.	Bhagawan Das, Rai Bahadur, M.A. *Srinagar, Kashmir.*
1893 Mar. 1.	N.R.	Bharat Singh, Maharaja Kumara Sirdar, I.C.S. (retired). *Ghazipur.*

Date of Election.		
1889 Mar. 6.	R.	Bhupendra Sri Ghosha, B.A., B.L., Attorney-at-Law. 26, *Barnushee Ghose Street, Calcutta.*
1902 Mar. 5.	R.	Binoy Krishna Deb, Raja Bahadur. 106-1, *Grey Street, Calcutta.*
1898 June 1.	N.R.	Bepin Behari Gupta. ***Ravenshaw College, Cuttack.***
1880 April 7.	N.R.	Bepin Chandra Rai. *Giridih, Chota Nagpur.*
1897 Feb. 3.	A.	Bloch, Theodor, PH.D. *Europe.*
1893 Feb. 1.	N.R.	Bodding, The Revd. P. O. *Mahalpahari, viâ Rampore Haut, Sontal Parganas.*
1885 Mar. 4.	A.	Bolton, Charles Walter, C.S.I., I.C.S. (retired). *Europe.*
1895 July 3.	N.R.	Bonham-Carter, Norman, I.C.S., Inspector-General of Police, Eastern Bengal and Assam. *Shillong.*
1895 April 3.	F.M.	Bourdillon, Sir James Austin, K.C.S.I., C.S.I., I.C.S. (retired). C/o Messrs. Richardson & Co. 25, *Suffolk Street, Pall Mall, London.*
1906 Sept. 19.	R.	Bradley-Birt, Francis Bradley, I.C.S., Joint Magistrate, 24-Parganas. *Calcutta.*
1904 July 6.	R.	Brajendra Nath, De, M.A., I.C.S., Magistrate and Collector. *Chinsura.*
1906 Nov. 7.	N.R.	Bramley, Percy, Supdt. of Police. *Agra.*
1860 Mar. 7.	L.M.	Brandis, Sir Dietrich, K.C.I.E., PH.D., F.L.S., F.R.S. 21, *Kaiserstrasse, Bonn, Germany.*
1906 July 4.	R.	Brown, Lieut.-Col. Edwin Harold, M.D., I.M.S. 2, *Alipur Road, Calcutta.*
1905 Mar. 1.	N.R.	Brown, William Barclay, I.C.S., District Judge. *Comillah.*
1901 Sept. 25.	R.	Buchanan, Major Walter James, I.M.S., Inspector-General of Jails. *Calcutta.*
1901 June 5.	R.	Burkill, Isaac Henry, M.A., Reporter on Economic Products to the Govt. of India. *Calcutta.*
1896 Jan. 8.	R.	Burn, Richard, I.C.S., Editor, Imperial Gazetteer. *Calcutta.*
1900 May 2.	R.	Butcher, Flora, M.D., Medical Mission. 31, *Free School Street, Calcutta.*
1904 Aug. 3.	R.	Bythell, Major William John, R.E., Survey of India. *Bengal Club, Calcutta*
1898 Sept. 30.	R.	Cable, Sir Ernest, *Kt.* 101-1, *Clive Street. Calcutta.*
1906 Dec. 5.	R.	Caddy, Dr. Adrian, M.D. (Lond.), F.R.C.S. (Eng.), D.P.H., R.C.P.S. (Lond.). 2-2, *Harrington Street, Calcutta.*
1906 July 4.	R.	Caddy, Dr. Arnold, M.D., F.R.C.S. 2-2, *Harrington Street, Calcutta.*
1901 Jan. 2.	A.	Campbell, Duncan. *Europe.*

Date of Election.		
1901 Mar. 6.	N.R.	Campbell, William Edgar Marmaduke, I.C.S., Magistrate and Collector. *Hamirpur.*
1895 July 3.	R.	Carlyle, The Hon. Mr. Robert Warrand, C.I.E., I.C.S., Chief Secretary to the Government of Bengal. *Calcutta.*
1906 Mar. 7.	A.	Chandima, Phra Maha. *Europe.*
1899 June 7.	N.R.	Chandra Kumar Sarkar. *Kawkanik, Moulmein.*
1901 Aug. 7.	R.	Chandra Narayan Singh, Rai Bahadur. 16, *Theatre Road, Calcutta.*
1901 June 5.	N.R.	Chapman, Edmund Pelly, I.C.S. District and Sessions Judge. *Mozafferpur.*
1906 Jan. 3.	R.	Chapman, John Alexander, Presidency College. *Calcutta.*
1904 July 6.	A.	Charles, Albert Pendrill, B.A., I.C.S. *Europe.*
1906 Nov. 7.	N.R.	Clarke, Geoffrey Roth, I.C.S, Postmaster-General. *Madras.*
1905 Aug. 2.	A.	Clemesha, Captain William Wesley, M.B., I.M.S. *Europe.*
1906 July 4.	R.	Connor, Captain Frank Powell, F R.C.S. (Eng.), L.R.C.P (Lond.), I.M.S., 13th Rajputs. *Alipur, Calcutta.*
1903 Aug. 26.	R.	Copleston, The Most Revd. Dr. Reginald Stephen, D.D. *Lord Bishop of Calcutta.*
1898 June 1.	F.M.	Cordier, Dr. Palmyr. 2, *Boulvard Gambettar,* 2, *Hanoi (Tonkin), French Indo-China.*
1901 June 5.	R.	Crawford, Lieut.-Col. Dirom Grey, I.M.S., Civil Surgeon. *Hughli, Chinsura.*
1876 Mar. 1.	F.M.	Crawfurd, James, B.A., I.C.S. (retired), *Thornwood, Uddington, Lanarkshire, Scotland.*
1887 Aug. 25	R.	Criper, William Risdon, F.C.S., F.I.C., A.R.S.M. *Konnagar.*
1895 July 3.	A.	Cumming, John Ghest, I.C.S. *Europe.*
1905 July 5.	R.	Cunningham, John Arthur, B.A , *Alipur Observatory, Calcutta.*
1885 Nov. 4.	R.	Damodar Das Barman. 55, *Clive Street, Calcutta.*
1905 July 5.	N.R.	Das, J. N. *Daulatpur P.O., Khulna.*
1873 Dec. 3.	F.M.	Dames, Mansel Longworth, I.C.S. *Algeria, Enfield, Middlesex, England.*
1906 Dec. 5.	N.R.	Deare, Major Benjamin Hobbs, M.R.C.S. (Eng.), L.R C.P. (Lond.), D.P.H. (Canb.), I.M.S. *Bankipur.*
1904 Sept. 28.	N.R.	DeCourcy, W. B. *Silcari P.O., Cachar.*
1895 Dec. 4.	N.R.	Delmerick, Charles Swift, Sub-Depy. Opium Agent. *Bareilly.*
1906 Dec. 5.	R.	Dentith, Arthur William, I.C.S., Asstt. Comptroller of India Treasuries. *Calcutta.*

Date of Election.		
1898 Jan. 5.	R.	Dods, W. K., Agent, Hongkong and Shanghai Banking Corporation. *Calcutta.*
1906 Dec. 5.	R.	Donnan, Major William, Indian Army, Examiner of Ordnance Factory Accounts in India. *Calcutta.*
1902 July 2.	R.	Doxey, F. 12, *Store Road, Ballygunge, Calcutta.*
1886 June 2.	R.	Doyle, Patrick, C.E., F.R.A.S., F.G.S., Editor and Proprietor, "Indian Engineering." *Calcutta.*
1902 Jan. 8.	A.	Drummond, J. R., I.C.S. *Europe.*
1892 Sept. 22.	R.	Drury, Lieut.-Col. Francis James, I.M.S., Civil Surgeon. *Howrah.*
1889 Jan. 2.	A.	Dudgeon, Gerald Cecil. *Europe.*
1905 April 5.	N.R.	Dunnett, James Macdonald, I.C.S., Settlement Officer. *Rawalpindi.*
1879 Feb. 5.	F.M.	Duthie, John F., B.A., F.L.S. *Royal Botanic Gardens, Kew, Surrey, England.*
1905 May 3.	R.	Dwarkanath Chakravarti, M.A., B.L., Vakil, High Court. *Calcutta.*
1900 April 4.	N.R.	Dyson, Lt.-Col. Herbert Jekyl, F.R.C.S., I.M.S. Civil Surgeon. *Hazaribagh.*
1906 Nov. 7.	N.R.	Eadie, Lieut. John Inglis, 97, *Deccan Infantry, Bolaram.*
1900 July 4.	R.	Earle, Archdale, I.C.S., Director of Public Instruction, Bengal. *Calcutta.*
1903 Oct. 28.	A.	Edelston, T. D. *Europe.*
1903 May 6.	N.R.	Edwards, Walter Noel. *Sootea P.O., Tezpur, Assam.*
1900 Mar. 7.	A.	Fanshawe, Sir Arthur Upton, C.S.I., K.C.I.E., I.C.S. *Europe.*
1900 Aug. 29.	A.	Fanshawe, H. C., C.S.I., I.C.S. *Europe.*
1901 Mar. 6.	A.	Fergusson, J. C. *Europe.*
1904 Aug. 3	R.	Fermor, Lewis Leigh, A.R.S.M., F.G.S., Asstt. Supdt., Geological Survey of India. *Calcutta.*
1906 Dec. 5.	R.	Finck, Dr. H., M.D., Surgeon to the Consulate-General for Germany. *Calcutta.*
1906 Oct. 31.	N.R	Finlow, Robert Steel, Fibre Expert to the Govt. of Eastern Bengal and Assam. *Shillong.*
1898 Sept. 30.	R.	Firminger, The Revd. Walter Kelly, M.A., Chaplain, St. Stephen's Church. *Kidderpore, Calcutta.*
1906 Dec. 5.	R.	Foster, Captain Henry Bertram, I.M.S. *Eden Hospital, Calcutta.*
1905 Jan. 4.	R.	Fraser, His Honour Sir Andrew Henderson Leith, M.A., LL.D., K.C.S.I., Lieutenant-Governor of Bengal *Calcutta.*
1902 April 2.	A.	Fuller, Sir Joseph Bampfylde, K.C.S.I. *Europe.*

Date of Election.		
1903 Mar. 4.	R.	Gage, Captain Andrew Thomas, M.A., M.B., B.SC., F.L.S., I.M.S. *Royal Botanic Garden, Sibpur, Howrah.*
1893 Jan. 11.	N.R.	Gait, Edward Albert, C.I.E., I.C.S. Commissioner, Chota Nagpur Division. *Ranchi*
1899 Aug. 30.	R.	Garth, Dr. H. C. 4, *Little Russell Street, Calcutta.*
1906 Sept. 19	N.R.	Gauri Dutta Misra Vidyabhusana, Pandit, M.R.A.S. *Gauhati.*
1902 June 4.	N.R.	Ghuznavi, A. A. *Delduar, Mymensingh.*
1906 Feb. 7.	R.	Girindra Kumar Sen. *Presidency College, Calcutta.*
1892 Jan. 6.	N.R.	Girindra Nath Dutt, B.A., M.R.A.S., M.S.A. *Hatwa.*
1902 Feb. 5.	R.	Girish Chandra Ghosh, Dramatist. 13, *Bosepara Lane, Calcutta.*
1889 June 5.	N.R.	Girjanath Roy, Maharaja. *Dinagepore.*
1861 Feb. 5.	N.S.	Godwin-Austen, Lieut.-Colonel Henry Haversham, F.R.S., F.Z.S., F.R.G.S. *Nore, Godalming, Surrey, England.*
1905 Aug. 2.	N.R.	Gourlay, Captain Charles Aikman, I.M.S. Deputy Sanitary Commissioner, Eastern Bengal and Assam. *Shillong*
1901 Aug. 28.	N.R.	Govinda Das. *Durgakund, Benares City.*
1897 July 7.	A.	Grant, Major John Wemyss, I.M.S. *Europe.*
1905 May 3.	R.	Graves, H. G., A.R.S.M. *United Service Club, Calcutta.*
1876 Nov. 15.	A.	Grierson, George Abraham, PH.D., D.LITT., C.I.E., I.C.S. (retired). *Rothfarnham, Camberly, Surrey, England.*
1900 Dec. 5.	L.M.	Grieve, J. W. A., Depy. Conservator of Forests. *Chaibasa.*
1904 Jan. 6.	N.R.	Gulab Shanker Dev Sharman, F.T.S. *Puchbadra.*
1901 Mar. 6.	N.R.	Habibur Rahman Khan, Maulavi, Raees. *Bhikanpur, Dt. Aligarh.*
1892 Jan. 6.	N.R.	Haig, Major Wolseley, Indian Army, 1st Asstt. to the Resident. *Hyderabad, Deccan.*
1904 Sept. 28	A.	Hallward, Norman Leslie, *Europe.*
1889 Mar. 6.	N.R.	Hanuman Prasad, Raees and Zemindar. *Chunar.*
1885 Feb. 4.	R.	Haraprasad Shastri, Mahamahopadhyaya, M.A., Principal, Sanskrit College. *Calcutta.*
1899 April 5.	A.	Hare, Lieut.-Col. Edward Christian, I.M.S. *Europe.*
1904 Jan. 6.	R.	Harendra Krishna Mukerjee, M.A. 54, *Sankaripara Road, Calcutta.*
1903 June 3.	R.	Hari Nath De, M.A., *Hughli College, Chinsura.*

Date of Election.		
1902 Dec. 3.	N.R.	Harnarain Shastri, *Hindu College, Delhi.*
1906 Dec. 5.	N.R.	Harris, Lieut. G., 56 *Infantry, F.F. Hangu.*
1906 July 4.	R.	Harris, Lt.-Col. George Francis Angelo, I.M.S. 14, *Russell Street, Calcutta.*
1906 Dec. 5.	R.	Harvey, Captain D., R.A.M.C. *Station Hospital, Calcutta.*
1884 Mar. 5.	L.M.	Hassan Ali Mirza, Sir Wala Qadr Sayid, G.C.I.E. *Murshidabad.*
1897 Feb. 3.	R.	Hayden, Henry Herbert, B.A., B.E., F.G.S., Supdt., Geological Survey of India. *Calcutta.*
1906 Dec. 5.	R.	Hayward, Major William Davey, M.B., I.M.S., Police Surgeon. *Calcutta.*
1905 July 5.	N.R.	Hemchandra Goswami. *Chuagacha, Jessore.*
1905 May 3.	N.R.	Hemendra Prasad Ghose, Zemindar and Litterateur. *Prasad Lodge, Changalbha P.O., Jessore.*
1904 June 1.	F.M.	Hewett, J. F., I.C.S., (retired). *Holton Cottage Oxford, England.*
1904 Dec. 7.	N.R.	Hill, Ernest George. *Muir Central College, Allahabad.*
1906 Dec. 5.	R.	Hirst, Reginald John, Bengal Police. 15-2, *Strand Road, Calcutta.*
1891 July 1.	R.	Holland, Thomas Henry, A.R.C.S., F.G.S., F.R.S., Director, Geological Survey of India. *Calcutta.*
1872 Dec. 5.	A.	Hoernle, Dr. Augustus Frederick Rudolf, PH.D., C.I.E. 8, *Northmoor Road, Oxford, England.*
1898 Feb. 2.	R.	Hooper, David, F.C.S. 1, *Sudder Street, Calcutta.*
1906 Oct. 31.	R.	Hornell, William Woodward, B.A., Assistant Director of Public Instruction, Bengal. *Calcutta.*
1901 Dec. 4.	R.	Hossack, Dr. W. C. 47, *Park Street, Calcutta.*
1873 Jan. 2.	L.M.	Houstoun, George L., F.G.S., *Johnstone Castle, Renfrewshire, Scotland.*
1906 May 2.	F.M.	Howell, Evelyn Berkeley, B.A., I.C.S. 16, *St. James Square, London.*
1905 July 5.	N.R.	Humphries, Edgar de Montfort, B.A., I.C.S., Settlement Officer. *Banda.*
1890 Dec. 3.	A.	Hyde, The Revd. Henry Barry, M.A. *Europe.*
1903 Sep. 23.	N.R.	Ito, C. *Engineering College, Tokyo, Japan.*
1866 Mar. 7.	F.M.	Irvine, William, I.C.S. (retired). *Hollescroft, Castelnau, Barnes, London, S.W.*
1906 Dec. 5.	N.R.	Jack, James Charles. I.C.S., Magistrate and Collector. *Backergunge.*

Date of Election.		
1905 Nov. 1.	N.R.	Jackson, A. M. T., I.C.S., District Magistrate. *Belgaum.*
1904 Jan. 6.	A.	Jackson, Victor Herbert, M.A. *Europe.*
1898 Mar. 2.	N.R.	Jadunath Sarkar. *Patna College, Bankipur.*
1885 April 1.	R.	Jadoonath Sen, Civil Engineer. 35, *Sib Narain Das' Lane, Calcutta.*
1903 July 1.	R.	Jagadindranath Roy, Maharaja Bahadur. *Lansdowne Road, Calcutta.*
1895 Mar. 6.	R.	Jagadis Chandra Bose, M.A., D.SC., C.I.E., *Presidency College, Calcutta.*
1905 July 5	N.R.	Jain Vaidya. *Jahari Bazar, Jaipur, Rajputana.*
1895 Aug. 29.	N.R.	Jatindranath Rai Chaudhuri, MA., B.L. *Taki, Jessore.*
1889 Jan. 2	R.	Jogendra Chandra Ghose, The Hon. Mr., M.A., B.L., Pleader, High Court. *Calcutta.*
1902 May 7	R.	Jogendra Nath Sen Vidyabhusana, M.A. 347, *Upper Chitpur Road, Calcutta.*
1896 Mar. 4.	R.	Jogendra Nath Das-Gupta, B.A., (Oxon.), Barrister-at-Law, *Presidency College. Calcutta.*
1868 June 3.	R.	Jotindramohan Tagore, Maharaja Sir Bahadur, K.C.S.I. *Pathuriaghatta, Calcutta.*
1899 Sep. 29.	R.	Jotindra Nath Mukharji, B.A., Solicitor. 8, *Old Post Office Street, Calcutta.*
1906 July 4.	R.	Jones, Major John Lloyd, M.B (Dub.), M.R.C.S. (Lond.), D.P.H. (Cantb.), F.C.A., I.M.S. *United Service Club, Calcutta.*
1904 Mar. 4.	N.R	Kamlanand Singh, Kumar. *Srinagar Raj, Srinagar P.O., Purneah District.*
1905 May 3.	N.R.	Kashi Prasad Jayaswal. *Narghat, Mirzapur.*
1906 Dec. 5.	N.R	Kaye, George Rusby, Officer in charge of the Bureau of Education. *Simla.*
1877 Aug. 30.	R.	Kedar Nath Dutt. 1, *Sikdarpara Lane, Calcutta.*
1899 April 5.	R.	Kempthorne, H. E 27, *Dalhousie Square, West. Calcutta.*
1906 Aug. 1.	R.	Kennedy, Dr. W. W., M.A., M.D., M R.C.S., L.R.C P., D P.H. 9, *Russell Street, Calcutta.*
1882 Mar. 1.	N.R.	Kennedy, Pringle, M.A., B.L., Vakil. *Mozafferpur.*
1906 Sept. 19.	R.	Kesteven, Charles Henry, Offg. Solicitor to Government. *Calcutta.*
1867 Dec. 4.	A.	King, Sir George, M.B., K.C.S.I., LL.D., F.L.S., F.R.S., I.M.S. (retired). *C/o Messrs. Grindlay & Co., 55, Parliament Street, London, S.W.*

Date of Election		
1895 Sept. 19.	N.R.	Kiran Chandra De, B.A., I.C.S., Registrar of Co-operative Credit Societies, Eastern Bengal and Assam. *Shillong.*
1904 May 4.	N.R.	Knox, Kenneth Neville, I.C.S., Magistrate and Collector. *Banda.*
1905 Aug. 2.	N.R.	Kripamaya Ananga Bhimkishore Gajapati Maharaj Dev, Sri. *Madras.*
1906 April 4.	N.R.	Krishnamachariar, M. *Madras.*
1898 April 6.	R.	Krishna Govinda Gupta, I.C.S., Barrister-at-Law, 6, *Store Road, Ballygunge, Calcutta.*
1896 July 1.	N.R.	Küchler, George William, M.A., *Bhagalpur.*
1894 July 4.	N.R.	Kushal Pal Singh, Raja, M.A. *Narki.*
1895 Aug. 29.	R.	Lachmi Narayan Singh, M.A., B.L., Pleader, High Court. *Calcutta.*
1901 June 5.	N.R.	Lajpat Rai, Lala, Pleader, Chief Court. *Lahore.*
1887 May 4.	L.M.	Lanman, Charles Rockwill, 9, *Farrar Street, Cambridge, Massachusetts, U.S America.*
1889 Mar. 6.	R.	La Touche, Thomas Henry Digges, B.A., F.G.S., Supdt., Geological Survey of India. *Calcutta.*
1900 Sep. 19.	A.	Law, The Hon. Sir Edward F. G., K.C.M.G., C.S.I. *Europe.*
1906 Aug. 1.	R.	Leake, Dr. A. M., Medical Officer, Bengal-Nagpur Railway. *Calcutta.*
1902 July 2.	N.R.	Leake, Henry Martin, M.A., F.L.S., Economic Botanist to Govt. of United Provinces. *Cawnpur.*
1889 Nov. 6.	R.	Lee, W. A., F.R.M.S. 38, *Strand Road, Calcutta.*
1906 Dec. 5.	R.	Leicester, Captain John Cyril Holdich, M.D., B.S., B.SC., F.R.C.S. (Eng.), M.R.C.P. (Lond.), I.M.S., *Presidency General Hospital, Calcutta.*
1903 July 1.	N.R.	Lefroy, Harold Maxwell, M.A., F.E.S., Imperial Entomologist. *Pusa.*
1900 May 2.	A.	Leistikow, F. R. *Europe.*
1902 Oct. 29.	R.	Lewes, A. H., Chartered Accountant. 25, *Mangoe Lane, Calcutta.*
1889 Feb. 6.	R.	Little, Charles, M.A., Registrar of the University. *Calcutta.*
1906 Feb. 7.	A.	Logan, A. C., I.C.S. *Europe.*
1906 Oct. 31.	N.R.	Luard, Captain Charles Eckford, M.A. (Oxon.). *Residency, Indore.*
1902 July 2.	R.	Luke, James, Journalist. 98, *Olive Street, Calcutta.*
1905 Aug. 2.	R.	Lukis, Lt.-Col. Charles Pardey, M.B., F.R.C.S., I.M.S. *Medical College, Calcutta.*
1869 July 7.	A.	Lyall, Sir Charles, M.A., K.C.S.I., C.I.E., LL.D. 82, *Cornwall Gardens, London, S.W.*

Date of Election		
1870 April 7.	L.M.	Lyman, B. Smith. 708, *Locust Street, Philadelphia, U.S. America.*
1906 Nov. 7.	R.	MacCabe, William Bernard, M.INST.C.E., F.I.C., Chief Engineer to the Corporation. *Calcutta.*
1896 Mar. 4.	N.R.	MacBlaine, Frederick, I.C.S., District and Sessions Judge. *Saran.*
1902 July 2.	A.	Macdonald, Dr. William Roy. *Europe.*
1891 Feb. 4.	N.R.	Macpherson, Duncan James, M.A., C.I.E., I.C.S., Commissioner. *Bhagulpur.*
1906 April 4.	N.R.	Mackenzie, Evan, Church of Scotland Mission. *Kalimpong, via Siliguri.*
1893 Jan. 11.	L.M.	Maclagan, The Hon. Mr. Edward Douglas, M.A., I.C.S., Chief Secretary to the Govt. of the Punjab. *Lahore.*
1902 April 2.	A.	Maddox, Major Ralph Henry, I.M.S. *Europe.*
1893 Jan. 11.	L.M	Madho Rao Scindia Alijah, Bahadur, Colonel His Highness Maharajah Sir, G.C.S.I., G.C.V.O., A.D.C., LL.D., Maharajah of Gwalior. *Jai Bilas, Gwalior.*
1895 Aug. 29.	R	Mahmud Gilani, Shams-ul-Ulama Shaikh. 23, *Lower Chitpur Road, Calcutta.*
1906 June 6.	R.	Manmatha Nath Mitra, Kumar. 34, *Shampukur Street, Calcutta.*
1890 June 4.	R.	Manmohan Chakravarti, M.A., B.L., Deputy Magistrate and Deputy Collector. *Howrah.*
1901 Aug. 28	R.	McLeod, Norman. 31, *Dalhousie Square, South, Calcutta.*
1899 Feb. 1	N.R.	McMahon, Major Sir Arthur Henry, K.C.I.E., C.S.I., C.I.E., Indian Army, Agent to the Governor-General and Chief Commissioner in Baluchistan. *Quetta.*
1899 Mar. 1.	N.R.	McMinn, Charles W., B.A., I.C.S. (retired). *Mussoorie.*
1901 June 5.	R.	Mann, Dr. Harold Hart, D.SC., M.SC., F.L.S. 1, *Sudder Street, Calcutta.*
1905 Dec. 6.	F.M.	Marsden, Edmund, B.A., F.R.G.S. *Pembroke House, Bath Road, Cheltenham, England.*
1902 May 7.	N.R	Marshall, John Hubert, Director General of Archæology. *Simla.*
1892 April 6.	R.	Maynard, Major Frederick Pinsent, I.M.S., Professor of Ophthalmic Surgery. *Medical College, Calcutta.*
1905 Aug. 2.	R.	McCay, Captain David, M.B., I.M.S., Professor of Physiology. *Medical College, Calcutta.*
1905 Feb. 1.	R	Megaw, Captain John Wallace Dick, I.M.S. *Medical College, Calcutta.*
1903 Aug. 5.	R.	Meerza Mohammad Masoom, Dr. 8, *Peter's Lane, Calcutta.*

Date of Election.		
1895 July 3.	F.M.	Melitus, Paul Gregory, C.I.E., I.C.S. *Notting Hill, London.*
1886 Mar. 3.	L.M.	Metha, Rustomjee Dhunjeebhoy, C.I.E. 55, *Canning Street, Calcutta.*
1900 Jan. 19.	R.	Michie, Charles. 8, *Mission Row, Calcutta.*
1884 Nov. 5	R.	Middlemiss, Charles Stewart, B.A., F.G.S., Supdt., Geological Survey of India. *Calcutta.*
1905 Dec. 6.	N.R.	Midhut Mohamed Hossain Khan. *Simla.*
1884 Sep 3.	R.	Miles, William Harry. 7, *Church Lane, Calcutta.*
1904 April 6.	N.R	Miller, The Hon. Mr. John Ontario, C.S.I., I.C.S., Chief Commissioner, Central Provinces. *Nagpur.*
1898 April 6.	N.R.	Milne, Captain Charles John Robertson, M.B., I.M.S., Civil Surgeon. *Berhampur.*
1906 Mar. 7.	R.	Milsted, W P. S. *Armenian College, Calcutta.*
1874 May 6.	F.M.	Minchin, F. J. V. C/o Messrs. F. J. V. Minchin & Co. *Gopalpore, Ganjam.*
1885 June 3.	N.R.	Mohammad Naemullah, Maulavi. *Bijnor.*
1880 Aug. 4.	N.R.	Mohanlall Vishnulall Pandia, Pandit, F.T.S. *Muttra.*
1906 Mar. 7.	N.R.	Mohinimohan Mitra, M.A., B.L., Pleader. *Burdwan.*
1906 July 4.	R.	Moir, Major David Macbeth, M.A., M.D., I.M.S. 8, *Middleton Street, Calcutta.*
1901 Aug. 7.	N.R.	Molony, Edmund Alexander, I.C.S. *Govt. Farm, Cawnpur.*
1899 Aug. 30.	N.R.	Mannu Lal, Dr. *Banda.*
1895 July 3.	N.R.	Monohan, Francis John, I.C.S., Commissioner, Assam Valley District. *Shillong.*
1906 Dec. 5.	N.R.	More, Lieut. James Carmichael, 51st Sikhs, F.F. *Bannu.*
1906 Dec. 5.	N.R.	Morton, Captain Sidney, *24th Punjabis. Dilkhusha, Lucknow.*
1894 June 6.	N.R.	Muhammad Shibli Nomani, Shams-ul-Ulama Maulavi. *Aligarh.*
1905 Jan. 4.	R.	Muksoodan Das. 13, *Shumbhoo Nath Mullick's Lane, Calcutta.*
1906 July 4.	R.	Mulvany, Major, John, I.M.S., Supdt., Presidency Jail. *Calcutta.*
1905 Mar. 1.	R.	Muralidhar Banerjee, *Sanskrit College, Calcutta.*
1906 Dec. 5.	R.	Murphy, Captain C. C. R., *The Suffolk Regiment, 42, Chowringhee Road, Calcutta.*
1906 Dec. 5.	R.	Murray, Captain John George Patrick, I.M.S., *Presidency General Hospital, Calcutta.*
1894 Sep. 27.	R.	Nagendra Nath Basu. 14 *Telepara Lane, Shampukur, Calcutta.*
1904 Dec. 7.	A.	Nathan, R., I.C.S. *Europe.*

Date of Election.		
1901 Mar. 6.	N.R.	Nevill, Henry Rivers, I.C.S., Editor, District Gazetteers, United Provinces, *Allahabad.*
1889 Aug. 29.	L.M.	Nimmo, John Duncan. 21, *Canning Street, Calcutta.*
1887 May 4.	R.	Nobinchand Bural, Solicitor. 10, *Old Post Office Street, Calcutta.*
1906 Dec. 5.	N.R.	Norman, H. C. *Queen's College, Benares.*
1901 June 5.	N.R.	Nundolal Dey, Subordinate Judge. *Bhagulpur.*
1899 Jan. 7.	A.	O'Brien, P. H., I.C.S. *Europe.*
1900 Dec. 5.	R.	O'Connor, Captain, W. F., C.I.E., R.A., *Bengal Club, Calcutta.*
1906 Dec. 5.	R.	O'Kinealy, Major Fredrick, M.R.C.S., (Eng.), L.R.C.P (Lond.), I.M.S. 15, *Loudon Street, Calcutta.*
1880 Dec. 1.	A.	Oldham, R. D., A.R.S.M., F.G.S. *Europe.*
1905 May 3.	N.R.	Ollenbach, A. J., I.C.S. *Khondmals, Phulbari, Orissa.*
1905 Nov. 1.	N.R.	O'Malley, Lewis Sydney Steward, B.A., I.C.S., Supdt., Imperial Gazetteer, Bengal, *Darjeeling.*
1892 Mar. 2.	L.M.	Ooday Pratab Singh, Raja, C.S.I., Raja of Bhinga. *Bhinga.*
1906 Aug. 1.	N.R	Osburn, Lieut. Arthur C., R.A.M.C., M.R.C.S., L.R.C.P. (Lond.). *Agra.*
1892 Dec. 7.	R.	Panchanan Mukhopadhyaya. 45, *Bechoo Chatterji's Street, Calcutta.*
1904 Jan. 6.	A.	Panna Lal, M.A., B.SC. *Europe.*
1901 Aug. 28.	A.	Panton, E. B. H., I.C.S. *Europe.*
1904 Aug. 3.	N.R.	Parasnis, D. B. *Satara.*
1902 Jan. 8.	A.	Parmeshwara Lall. *Europe.*
1901 June 5.	R.	Parsons, W., Secretary, Bengal Chamber of Commerce. *Calcutta.*
1899 Aug. 2.	R.	Peake, C. W., M.A., Meteorological Reporter to the Govt. of Bengal. *Calcutta.*
1906 Dec. 5.	N.R.	Peart, Captain C. L., 106*th Hazara Pioneers, Quetta.*
1906 July 4.	R.	Peck, Lieut.-Col. Francis Samuel, I.M.S. 6, *Harrington Street, Calcutta.*
1881 Aug. 25.	R.	Percival, Hugh Melvile, M.A., *Presidency College. Calcutta.*
1877 Aug. 1	N.R.	Peters, Lieut.-Col. C. T., M.B., I.M.S. (retired.) *Dinajpur.*
1906 April 4.	R.	Petrocochino, Leonidar. 226, *Lower Circular Road, Calcutta.*
1888 June 6.	L.M.	Pennell, Aubray Percival, B.A., Barrister-at-

Date of Election.		
1900 May 2.	R.	Phani Bhusan Mukerji, B.SC., Inspector of Schools, Presy. Divn. *Calcutta.*
1906 April 4.	R.	Phillips, Rev. A. H., *Church Missionary Society.* 70, *Diamond Harbour Road, Calcutta.*
1889 Nov. 6.	R	Phillott, Lieut.-Colonel Douglas Craven, 23rd Cavalry, F.F., Secretary, Board of Examiners. *Calcutta.*
1904 June 1.	F.M.	Pilgrim, G. Ellcock. *C/o Messrs. H. S. King & Co., Pall Mall, London.*
1904 Mar. 4.	A.	Pim, Arthur W., I.C.S. *Europe.*
1906 May 2.	N.R.	Prabhat Chandra Borua, Raja. *Gauripur, Assam.*
1899 Aug. 29.	N.R.	Prabhu Narain Singh, Bahadur, H. H. The Maharaja Sir, G.C.I.E., Maharaja of Benares. *Ramnagar Fort, Benares.*
1890 Mar. 5.	R.	Prafulla Chandra Ray, D.SC., Professor, Presidency College. *Calcutta.*
1887 May 4.	R.	Prasanna Kumar Ray, D.SC. (Lond. and Edin.). 7, *Ballygunge Circular Road, Calcutta.*
1898 April 6.	R.	Prodyat Coomar Tagore, Maharaj Coomar Sir, Kt. *Pathuriaghatta, Calcutta.*
1889 Mar 6.	A	Prain, Lieut.-Col. David, M.A., M.B., LL.D., I.M.S. *Europe.*
1901 April 3.	R.	Pramatha Nath, Mullick. 7, *Prasonno Kumar Tagore's Street, Calcutta.*
1905 July 5.	R.	Pramatha Nath Tarkabhuṣaṇa, *Sanskrit College, Calcutta.*
1880 Nov. 3.	R.	Pramatha Nath Bose, B.SC., F.G.S. 86, *Dhurrumtollah Street, Calcutta.*
1869 Feb. 3.	N.R.	Pratapa Chandra Ghosha, B.A. *Vindyachal.*
1892 Aug. 3.	N.R	Pratap Narain Singh, Maharaja. *Ajodhya, Oudh.*
1906 Aug. 1.	R.	Price, C. Stanley. 5, *Wellesley Square, South, Calcutta.*
1906 Mar. 7.	N.R.	Puran Chand Nahar, *Azimgunj, Murshidabad*
1893 Aug. 31.	N.R	Purmeshwar Narain Mahatha. *Mozafferpur.*
1877 Jan. 17.	N.R.	Radhakishor Dev Barman, H. H. The Maharaja *Tipperah.*
1902 April 2.	R.	Rajchunder Chunder, Attorney-at-Law. 5, *Hasting's Street, Calcutta.*
1902 Mar. 5.	R.	Rajendra Chandra Sastri, Rai Bahadur, M.A., Librarian, Bengal Library. *Calcutta.*
1905 July 5.	R.	Rajendra Nath Vidyabhusana, *Sanskrit College. Calcutta.*
1898 May 4.	R.	Rajendra Nath Mookerjee, 20, *Beadon Street, Calcutta.*

Date of Election.		
1900 April 4.	A.	Raleigh, Thomas. *Europe.*
1893 May 3.	N.R.	Ram Chandra Bhanj Deb, Maharaja Sri, Chief of Maurbhanj. *Baripada P.O., Balasore.*
1901 Jan. 2.	N.R.	Ramavatar Pande, B.A., I.C.S., Judge. *Mainpuri.*
1889 Nov. 6.	N.R.	Rameshwara Singh, H. H. The Hon. Maharaja Bahadur. *Durbhanga.*
1889 Jan. 2.	R.	Ramessur Maliah, Kumar. 6, *Cullen Place, Howrah.*
1879 April 7.	N.R.	Ram Saran Das, Rai Bahadur, M.A. Manager, Oudh Commercial Bank Ld. *Fyzabad.*
1905 Jan. 4.	N.R.	Rankin, James Thomas, I.C.S., Secy., Board of Revenue, Eastern Bengal and Assam. *Shillong.*
1904 Mar. 4.	F.M.	Rapson, E. J. *British Museum, London.*
1905 May 3.	R.	Richardson, The Hon. Mr. Thomas William, I.C.S., Secretary, Govt. of Bengal, General Dept. *Calcutta.*
1906 Aug. 1.	R.	Riddick, Captain G. B., R.A.M.C., Garrison Surgeon, Fort William. *Calcutta.*
1884 Mar. 5.	R.	Risley, Sir Herbert Hope, B.A., C.I.E., K.C.I.E., I.C.S., Secretary, Government of India, Home Dept. *Calcutta.*
1903 Mar. 4.	N.R.	Rogers, Charles Gilbert, F.L.S., F.C.H., Forest Department. *Port Blair, Andamans.*
1900 April 4.	R.	Rogers, Major Leonard, M.D., B.S., F.R.C.P., F.R.C.S., I.M.S. 47, *Park Street. Calcutta.*
1900 Aug. 29.	N.R.	Rose, Horace Arthur, I.C.S., Supdt., Gazetteer Revision, Punjab. *Multan.*
1901 Dec. 4.	R.	Ross, Dr. Edward Denison, PH.D., Officer in charge of the Records, Govt. of India, *Calcutta.*
1906 Feb 7.	N.R.	Russell, Charles, M.A., *Patna College, Bankipore.*
1906 May 2.	N.R.	Sakhawat Hosain, Maulavi, B.A., Inspector of Schools. *Moradabad.*
1896 Aug. 27.	A.	Samman, Herbert Frederick, I.C.S. *Europe.*
1905 Mar. 1.	R.	Sanjib Chandra Sanial. 1, *Dihi Road, Calcutta.*
1897 Nov. 3.	R.	Sarada Charan Mitra, The Hon. Mr. Justice, M.A., B.L., Judge. High Court. *Calcutta.*
1905 Mar. 1.	R.	Sasi Bhusan Bose, M.A., *Bethune College. Calcutta.*
1900 May 2.	N.R.	Satindra Dev, Rai Mahasaya. *Bansberia, Hughli.*
1896 Mar. 4.	N.R.	Satish Chandra Banerji, Dr., M.A., LL.D., Advocate, High Court. *Allahabad.*
1902 June 4.	R.	Satis Chandra Vidyabhusana, Mahamahopadhyaya, M.A., *Presidency College. Calcutta.*

Date of Election.		
1897 Nov. 3.	R.	Saunders, C. 35, *Chowringhee Road, Calcutta.*
1902 Feb. 5.	R.	Schulten, Dr. C. 13, *Clive Row, Calcutta.*
1900 Dec. 5.	N.R.	Schwaiger, Imre George, Expert in Indian Art. *Kashmir Gate, Delhi.*
1897 Dec. 1.	N.R.	Seth, Mesrovb J. *Bombay.*
1906 Dec. 5.	N.R.	Sharp, Henry, M.A., Director of Public Instruction, Eastern Bengal and Assam. *Shillong.*
1903 April 1.	A.	Shaun, Montague Churchill. *Europe.*
1900 May 2.	R.	Shrager, Adolphe. 4, *Auckland Square, Rawdon Street, Calcutta.*
1906 Mar. 7.	R.	Shyama Kumar Tagore, Kumar, Zemindar. 65, *Pathuriaghutta Street, Calcutta.*
1902 Feb. 5.	N.R.	Shyam Lal, Lala, M.A., LL.B., Deputy Collector *Allahabad.*
1894 Aug. 30	R.	Sibnarayan Mukerjee *Uttarpara, Hughli.*
1899 May 3.	N.R.	Silberrad, Chas. A., B.A., B.SC., I.C.S., Depy. Commissioner *Banda.*
1903 Aug. 26	N.R.	Simpson, J Hope, I.C.S., Registrar of Co-operative Credit Societies, Upper Provinces. *Allahabad.*
1904 June 1.	R.	Simpson, Robert Rowell, B.SC., *Department of Mines. Calcutta.*
1898 Aug. 3.	N.R	Sita Ram, B.A., Depy. Magistrate. *Moradabad.*
1872 Aug. 5.	N.R.	Skrefsrud, The Revd. Laurentius Olavi, Secretary and Treasurer, Indian Home Mission to the Sonthals. *Benagerio, via Rampore Haut.*
1905 Mar. 1.	R.	Sorabji, Cornelia, Court of Wards. 6, *Camac Street, Calcutta.*
1901 Dec. 4.	N.R.	Spooner, D. Brainerd, Archæological Surveyor, North-West Frontier Province. *Peshawar.*
1904 Sept. 28.	R.	Stapleton, Henry Ernest, B.A., B.SC., 27, *Chowringhee Road, Calcutta.*
1898 April 6.	N.R.	Stark, Herbert A., B.A., Inspector of Schools. *Ranchi.*
1901 Mar. 6.	N.R.	Stebbing, E. P., F.E.S., F.Z.S., Imperial Forest Zoologist. *Dehra Dun*
1891 Aug. 27.	N.R	Stein, Dr., M. A., PH.D., Inspector-General of Education, N.-W.F.P. and Baluchistan. *Peshawar.*
1899 Aug. 30.	R.	Stephen, St. John, B.A., LL.B. Barrister-at-Law. 7. *Russell Street, Calcutta.*
1904 June 1.	R	Stephen, The Hon'ble Mr. Justice Harry Lushington, Judge, High Court. *Calcutta.*
1900 Aug. 29.	N.R.	Stephenson, Captain John, I.M.S., Civil Surgeon. *Umballa City.*
1906 Dec. 5.	N.R.	Stokes, Captain Claude Bayfield, 3rd *Skinner's Horse. Neemach.*

Date of Election.		
1904 July 6.	A.	Streatfield, C. A. C., I.C.S. *Europe.*
1904 Jan. 6.	F.M.	Stuart, Louis, I.C.S. *St. Clement's Hill, Norwich, England.*
1906 Dec. 5.	R.	Subodh Chandra Mahalanobis, B.SC., F.R.S.E., F.R.M.S., 210, *Cornwallis Street, Calcutta.*
1905 Jan. 4.	R.	Sukumar Sen. 80, *Lower Circular Road, Calcutta.*
1906 June 6.	N.R.	Surendra Prasad Sanial, Sri, M.A., F.C.S., Private Secretary to Raja Bahadur. *Majhauli.*
1900 July 4.	N.R.	Syam Sunder Das, B.A. *Benares City.*
1904 July 6.	N.R.	Talbot, Walter Stanley, I.C.S. *C/o Messrs. King, King & Co., Bombay.*
1893 Aug. 31.	N.R.	Tate, George Passman, Asstt. Supdt., Survey of India. *Dehra Dun.*
1906 Dec. 5.	N.R.	Tek Chand. Dewan, B.A., M.R.A.S., I.C.S., Deputy Commissioner. *Ludhianah.*
1878 June 5.	A.	Temple, Colonel Sir Richard Carnac, Bart., Indian Army, C.I.E., *Europe.*
1904 June 1.	R.	Tipper, George Howlett, B.A., Asstt. Supdt., Geological Survey of India. *Calcutta.*
1861 June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (retired). *Dedham, Essex, England.*
1899 Aug. 30.	N.R.	Tribhuban Deb, Raja S., Feudatory Chief of Bamra. *Deogarh, Bamra.*
1904 May 4.	N.R.	Thanawala, Framjee Jamasjee. 90, *Cawasjee Patel Street, Fort, Bombay.*
1875 June 2.	N.R.	Thibaut, Dr. G., Registrar of the University. *Allahabad.*
1898 Nov. 2.	R	Thornton, Edward, F.R.I.B.A. 6-7 *Clive Street, Calcutta.*
1847 June 2.	L.M.	Thuillier, Lieut.-Genl. Sir Henry Edward Landor, Kt., C.S.I., F.R.S., R.A. *Tudor House Richmond, Surrey, England.*
1897 Jan. 6.	N.R.	Tulsi Ram Misra, M.A. *Awagarh.*
1905 Jan 4.	N.R	Turner. Frank, B.A., *The College. Dacca.*
1906 June 6.	R.	Umapati Datta Sharma, Pandeya. 97, *Muktaram Babu's Street, Calcutta.*
1901 Aug. 29.	R	Upendra Nath Sen, Kaviraja. 29, *Colootolla Street, Calcutta.*
1905 Aug. 2.	R.	Urwin, Captain John Johnson, M.B., I.M.S. *Medical College, Calcutta.*
1905 July 5.	R.	Vanamali Chakravarti, *Sanskrit College. Calcutta.*
1900 Aug. 29.	R.	Vaughan, Major Joseph Charles Stoelke, I.M.S., Supdt., Campbell Medical School and Hospital. *Calcutta.*

Date of Election.		
1890 Feb. 5.	N.R.	Venis, Arthur, M.A., Principal, Sanskrit College. *Benares.*
1894 Feb. 7.	N.R.	Vishwa Nath Singh, H. H. The Raja Bahadur. *Chhatturpur, Bundelkhund.*
1901 Mar. 6.	N.R.	Vogel, J. Ph., Archæological Surveyor, Punjab. *Lahore.*
1894 Sept. 27.	L.M.	Vost, Major William, I.M.S., Civil Surgeon. *Muttra.*
1902 Oct. 29.	R.	Vredenburg, E., B.L., B.SC., A.R.C.S., Asst. Supdt., Geological Survey of India. *Calcutta.*
1900 Jan. 19.	R.	Wallace, David Robb, 9, *Clive Row, Calcutta.*
1901 June 5.	R.	Walsh, Ernest Herbert Cooper, I.C.S., Commissioner, Burdwan Division. *Chinsura.*
1889 Nov. 6.	A.	Walsh, Lieut-Col. John Henry Tull, I.M.S. *Europe.*
1900 April 4.	N.R.	Walton, Captain Herbert James, M.B., F.R.C.S., I.M.S., Civil Surgeon. *Manipuri.*
1905 Dec. 6.	R.	Watson, Edwin Roy, M.A., B.SC., *Civil, Engineering College, Sibpur, Howrah.*
1874 July 1.	A.	Watt, Sir George, Kt., C.I.E. *Europe.*
1902 April 2.	R.	Wheeler, Henry, I.C.S., Secretary, Board of Revenue, L.P. *Calcutta.*
1906 Sept. 19.	N.R.	Whitehead, Richard Bertram, I.C.S., Asstt. Commissioner, *Simla.*
1905 Dec. 6.	R.	Wilson, James, M.A., C.S.I., I.C.S., Secretary to the Government of India, Revenue and Agricultural Dept. *Calcutta.*
1904 Mar. 4.	R.	Wood, William Henry Arden, M.A., F.C.S., F.R.G.S., Principal, La Martiniere. *Calcutta.*
1906 July 4.	R.	Woodley, Rev. E. C., M.A., Principal, London Missionary Society's College. *Calcutta.*
1900 Dec. 5.	A.	Woodman, Henry Charles, I.C.S. *Europe.*
1906 Mar. 7.	N.R.	Woolner, A. C. M.A., Principal, Oriental College. *Lahore.*
1894 Aug. 30.	A.	Wright, Henry Nelson, B.A., I.C.S. *Europe.*
1898 July 6.	R.	Wyness, James, C.E. 14, *Clive Street, Calcutta.*
1900 Mar. 7.	R.	Yogesa Chandra Sastri-Samkhyaratna-Vedatirtha. Pandit. 20-1, *Nilmony Dutts' Lane, Calcutta.*
1905 Mar. 1.	R.	Young, Rev. A. Willifer. 23, *Chowringhee Road, Calcutta.*
1906 June 6.	R.	Young, Mansel Charles Gambier, Resident Engineer, East India Railway. *Calcutta.*

SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Dr. Ernst Hæckel, Professor in the University of Jena. *Prussia.*
1884 Jan. 15.	Charles Meldrum, Esq., C.M.G., M.A., LL.D., F.R.A.S., F.R.S. *Mauritius.*
1884 Jan. 15.	The Revd. Professor A. H. Sayce, Professor of Assyriology, Queen's College. *Oxford, England.*
1884 Jan. 15.	Monsieur Émile Senart. 18, *Rue François Ier, Paris, France.*

HONORARY MEMBERS.

Date of Election.	
1848 Feb. 2.	Sir Joseph Dalton Hooker, G.C.S.I., C.B., M.D., F.R.S., D.C.L., LL.D., F.L.S., F.G.S., F.R.G.S. *Sunningdale, Berkshire, England.*
1879 June 4.	Dr. Albert Günther, M.A., M.D., PH.D., F.Z.S., F.R.S. 23, *Lichfield Road, Kew, Surrey, England.*
1879 June 4.	Dr. Jules Janssen. *Observatoire d'Astronomie Physique de Paris, France.*
1879 June 4.	Professor P. Reynaud. *La Faculté des Lettres, Lyons, France.*
1881 Dec. 7.	Lord Kelvin, G.C.V.O., D.C.L., LL.D., F.R.S.E., F.R.S. *University Library, Glasgow, England.*
1883 Feb. 7.	Dr Alfred Russell Wallace, LL.D., D.C.L., F.L.S., F.Z.S., F.R.S. *Corfe View, Parkstone, Dorset, England.*
1894 Mar. 7.	Mahāmāhopadhyāya Chandra Kanta Tarkalankara. 26, *Baranushee Ghose's Street, Calcutta.*
1894 Mar. 7.	Professor Theodor Noeldeke. *C/o Mr. Karl T. Trübner, Strassburg, Germany.*
1895 June 5.	Lord Rayleigh, M.A., D.C.L., D.SC., LL.D., PH.D., F.R.A.S., F.R.S. *Terling Place, Witham, Essex, England.*
1895 June 5.	Lt.-Genl. Sir Richard Strachey, R.E., G.C.S.I., LL.D., F.R.G.S., F.G.S., F.L.S., F.R.S. 69, *Lankaster Gate, London, W.*
1895 June 5.	Charles H. Tawney, Esq., M.A., C.I.E. *C/o India Office, London.*
1896 Feb. 5.	Lord Lister, F.R.C.S., D.C.L., M.D., LL.D., D.SC., F.R.S., 12, *Park Crescent, Portland Place, London.*
1896 Feb. 5.	Sir Michael Foster, K.C.B., M.A., M.D., D.C.L., LL.D., D.SC., F.L.S., F.R.S. *Great Shelford, Cambridge, England.*
1896 Feb. 5.	Professor F. Kielhorn, PH.D., D.LITT., LL.D., C.I.E. *The University, Gottingen, Prussia.*

Date of Election.	
1896 Feb. 5.	Professor Charles Rockwell Lanman. 9, *Farrar Street, Cambridge, Massachusetts, U.S. America.*
1899 Feb. 1.	Dr. Augustus Frederick Rudolf Hœrnle, PH.D., C.I.E. 8, *Northmoor Road, Oxford, England.*
1899 Dec. 6.	Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. *British Museum (Nat. Hist.), Cromwell Road, London, S.W.*
1899 Dec. 6.	Sir George King, M.B., K.C.I.E., LL.D., F.L.S., F.R.S., I.M.S. (retired). *C/o Messrs. Grindlay & Co.,* 55, *Parliament Street London, S.W.*
1899 Dec. 6.	Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. Keeper, University Museum. *Oxford, England.*
1899 Dec. 6.	Professor Edward Suess, Ph. D., Professor of Geology in the University of Vienna.
1901 Mar. 6.	Professor John Wesley Judd, C.B., LL.D., F.R.S., F.G.S., Late Prof. of the Royal College of Science. 30, *Cumberland Road, Kew, England.*
1902 Nov. 5.	Monsieur René Zeiller. *Ingénieur en chef des Mines, École superieur des Mines, Paris.*
1904 Mar. 2.	Professor Hendrick Kern. *Utrecht, Holland.*
1904 Mar. 2.	Professor Ramkrishna Gopal Bhandarkar, C.I.E. *Poona.*
1904 Mar. 2.	Professor M. J. DeGoeje. *Leide. Holland.*
1904 Mar. 2.	Professor Ignaz Goldziher, PH.D., D.LITT., LL.D. *Bud pest, Hungary.*
1904 Mar. 2.	Sir Charles Lyall, M.A., K.C.S.I., C.I.E., LL.D. 82, *Cornwall Gardens, London, S.W.*
1904 Mar. 2.	Sir William Ramsay, PH.D., (Tub.) LL.D., SC.D. (Dubl.)., F.C.S., F.I.C. *University College, Gower Street, London, W.C.*
1904 July 2.	Dr. George Abraham Grierson, PH.D., D.LITT., C.I.E., I.C.S. (retired). *Rothfarnham, Camberley, Surrey, England.*
1906 Mar. 7.	The Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S. 1, *Carlton House Terrace, London, S.W.*

ASSOCIATE MEMBERS.

Date of Election	
1874 April 1.	The Revd. E. Lafont, C.I.E., S.J. *Archbishop's House,* 12, *Park Street, Calcutta.*
1875 Dec. 1.	The Revd. J. D. Bate. 15, *St. John's Church Road, Folkestone. Kent, England.*
1875 Dec. 1.	Maulavi Abdul Hai. *Madrassah, Calcutta.*
1882 June 7.	Herbert Giles, Esq. *Europe.*
1884 Aug. 6.	F. Moore, Esq., F.L.S. *Claremont House, Avenue Road, Penge, Surrey, England.*

Date of Election.	
1885 Dec. 2.	Dr. A. Führer. *Europe.*
1886 Dec. 1.	Sri Sarat Chandra Das, Rai Bahadur, C.I.E. 51, *Sunkaritola, Lane, Calcutta.*
1892 April 6.	Acharyya Satyavrata Samasrami. 16-1, *Ghose's Lane, Calcutta.*
1892 Dec. 7.	Professor Paul Johannes Brühl. *Civil Engineering College, Sibpur, Howrah.*
1899 April 5.	Rai Bahadur Ram Brahma Sanyal, Supdt., Zoological Gardens. *Alipur, Calcutta.*
1899 April 5.	Pandit Visnu Prasad Raj Bhandari. Chief Librarian, Bir Library. *Kutmandu, Nepal.*
1899 Nov. 1.	The Revd. E. Francotte, S.J. 10, *Park Street, Calcutta.*
1902 June 4.	The Revd. A. H. Francke, Moravian Missionary. *Kyelang, Kangra District.*

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule* 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following members will be removed from the next Member List of the Society under the operation of the above Rule:—

Miss Margaret Adams.
Ameer Ali, Esq., M.A., C.I.E.
The Revd. Thomas Grahame Bailey, M.A., B.D.
Duncan Campbell, Esq.
H. C Fanshawe, Esq., C.S.I., I.C.S.
F. R. Leistikow, Esq.
P. H. O'Brien, Esq., I.C.S.
R. D. Oldham, Esq., A.R.S.M., F.G.S.
Sir George Watt, KT., C.I.E.

LOSS OF MEMBERS DURING 1906.

BY RETIREMENT.

Lieut.-Col. Alfred William Alcock, M.B., LL.D., C.I.E., F.R.S.
Lieut.-Col. D. S. E. Bain, I.M.S.
General Malcolm G. Clerk.
F. P. Dixon, Esq., I.C.S.
Major P. R. T. Gurdon, Indian Army.

Samuel Charles Hill, Esq., B.A., B.SC.
The Hon. Mr. John Hooper, B.A., I.C.S.
Colonel F. B. Longe, R.E.
Kumar Narendra Nath Mitra.
Frederick Eden Pargiter, Esq., B.A., I.C.S.
Sir Alexander Pedler, KT., C.I.E., F.R.S.
Maurice George Simpson, Esq., M.I.C.E.
Kumar Birendra Chandra Singh.
Edgar Thurston, Esq.

BY DEATH.

Ordinary Members.

Womes Chunder Bonnerjee, Esq., Barrister-at-Law.
John Macfarlane, Esq.
Mahamahopadhyaya Mahesa Chandra Nyayaratna, C.I.E.
Moung Hla Oung.

ASSOCIATE MEMBER.

Maulavi Abdul Hai.

Under Rule 40.

Frank Finn, Esq., B.A., F.Z.S.
Dr T. L. Walker.
Major-General James Waterhouse.

ELLIOTT GOLD MEDAL.

RECIPIENTS.

1893	Chandra Kanta Basu.
1895	Yati Bhusana Bhaduri, M.A.
1896	Jnan Saran Chakravarti, M.A.
1897	Sarasi Lal Sarkar, M.A.
1901	Sarasi Lal Sarkar, M.A.
1904	Sarasi Lal Sarkar, M.A. Surendra Nath Maitra, M.A.

BARCLAY MEMORIAL MEDAL.

RECIPIENTS.

1901	E. Ernest Green.
1903	Major Ronald Ross, F.R.C.S., C.B., C.I.E., F.R.S., I.M.S. (retired).
1905	Lt.-Col. D. D. Cunningham, F.R.S., C.I.E., I.M.S. (retired).

[APPENDIX.]

ABSTRACT STATEMENTS

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1906.

STATEMENT

1906. *Asiatic Society*

Dr.

	Rs.	As	P	Rs	As	P.
To Establishment						
Salaries ..	4,242	12	0			
Commission ..	555	13	1			
Pension	240	0	0			
				5,038	9	1
To Contingencies.						
Stationery	165	13	6			
Taxes	1,610	3	0			
Postage . .	875	12	3			
Freight .	143	6	3			
Meeting . .	96	13	6			
Auditing	100	0	0			
Electric Fans and Lights	748	0	0			
Insurance fee	187	8	0			
Petty repairs	8	9	6			
Miscellaneous ..	617	15	10			
				4,554	1	10
To Library and Collections.						
Books	3,061	7	9			
Binding	943	15	0			
Catalogue ...	1,600	0	0			
				5,605	6	9
To Publications						
"Journal and Proceedings," and "Memoirs,"	12,407	11	9			
To printing charges of Circulars, Receipt Forms, &c ...	280	4	0			
				12,687	15	9
Printing Haji Baba				1,794	4	0
Illumination				94	5	6
Building				7,758	3	9
Lantern				448	0	2
Furniture				484	0	0
To Personal Account (Written off and miscellaneous)				207	6	1
Loss on Government paper sold				453	7	0
To Extraordinary Expenditure						
Royal Society's Scientific Catalogue .				6 268	14	4
Balance .				1,79,519	3	3
Total Rs				2,24,913	13	6

No. 1

of Bengal. *1906.*

Cr.

	Rs	As	P.	Rs.	As.	P.
By Balance from last report				1,93,148	1	9
BY CASH RECEIPTS.						
Publications sold for cash	986	10	9			
Interest on Investments	6,730	13	1			
Rent of room on the Society's ground floor ...	650	0	0			
Allowance from Government of Bengal for the Publication of Anthropological and Cognate subjects	2,000	0	0			
Allowance from Government of Eastern Bengal and Assam	1,000	0	0			
Miscellaneous	76	10	2			
				11,444	2	0
BY EXTRAORDINARY RECEIPTS.						
Subscriptions to Royal Society's Scientific Catalogue				6,886	2	0
BY PERSONAL ACCOUNT.						
Admission fees	1,792	0	0			
Subscriptions	9,904	0	0			
Sales on credit	1,725	12	6			
Miscellaneous	18	11	3			
				13,440	7	9
TOTAL Rs. ..				2,24,918	13	6

J. A CHAPMAN,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1906. Oriental Publication Fund in Acct.

Dr.

To Cash Expenditure.

	Rs.	As.	P.	Rs.	As.	P.
Salaries	1,672	9	0			
Commission on collections	63	4	6			
Editing charges	3,312	4	0			
Postage	285	4	3			
Freight	82	2	0			
Printing charges	6,105	2	0			
Stationery	70	0	6			
Contingencies	79	4	6			
Binding	2	8	0			
				11,672	6	9
Refund of loan				2,000	0	0
To Personal Account (Written off and Miscellaneous)				13	12	0
Balance				1,335	14	9
Total Rs. ...				15,022	1	6

STATEMENT

1906. Sanskrit Manuscript Fund in Acct.

Dr.

To Cash Expenditure.

	Rs.	As.	P.	Rs.	As.	P.
Salaries	1,346	8	9			
Travelling charges	337	5	0			
Printing	148	0	0			
Postage	40	12	6			
Contingencies	365	9	3			
Purchase of Manuscripts	318	0	0			
Stationery	14	6	0			
Insurance fee	125	0	0			
				2,695	9	6
Balance				3,643	8	11
Total Rs. ...				6,339	2	5

No. 2.

with the Asiatic Society of Bengal. 1906.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report	... .				3,174	9	9
	By Cash Receipts.						
Government Allowance	... ...	9,000	0	0			
Publications sold for cash	... ..	701	7	0			
Advances recovered	... ...	86	14	0			
					9,788	5	0
	By Personal Account.						
Sales on credit	... ...				2,059	2	9
	Total Rs. ...				15,022	1	6

J. A. Chapman,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 3.

with the Asiatic Society of Bengal. 1906.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report	... ...				3,120	2	5
	By Cash Receipts.						
Government Allowance	... ...	3,200	0	0			
Publications sold for cash	.. ..	7	0	0			
Advances recovered ...	... ...	1	0	0			
					3,208	0	0
	By Personal Account.						
Sales on credit	... ...				11	0	0
	Total Rs. ...				6,339	2	5

J. A. Chapman,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1906. Arabic and Persian MSS. Fund in

Dr.

To Cash Expenditure.

	Rs.	As.	P.	Rs.	As.	P.
Salaries	2,307	8	0			
Purchase of Manuscripts	11,065	4	0			
Stationery	35	3	0			
Contingencies	392	2	6			
Postage ...	11	4	9			
Travelling charges	654	1	0			
Printing ...	8	0	0			
				14,473	7	3
Balance				1,985	8	9
Total Rs. ...				16,459	0	0

STATEMENT

1906. Bardic Chronicles MSS. Fund in

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance				2,400	0	0
Total Rs. ...				2,400	0	0

No. 4.

Acct. with the Asiatic Soc. of Bengal. 1906.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report				4,459	0	0
By Cash Receipts.						
Government Allowance	7,000	0	0			
Do. Do. special	5,000	0	0			
				12,000	0	0
Total Rs.				16,459	0	0

J. A. Chapman,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 5.

Acct. with the Asiatic Soc. of Bengal. 1906.

Cr.

By Cash Receipts.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report				2,400	0	0
Total Rs.				2,400	0	0

J. A. Chapman,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1906. *Personal*

Dr.

	Rs	As.	P.	Rs.	As.	P.
To Balance from last Report				9,132	9	10
To Cash Expenditure.						
Advances for purchase of Manuscripts, &c. . ..				4,431	6	0
To Asiatic Society	13,440	7	9			
,, Oriental Publication Fund ..	2,059	2	9			
Sanskrit Manuscript Fund ..	11	0	0			
				15,510	10	6
Total Rs. ..				29,074	10	4

No. 6.

Account. 1906.

Cr.

	Rs	As.	P	Rs	As	P.
By Cash Receipts	...			26,149	11	0
„ Asiatic Society	207	6	1			
„ Oriental Publication Fund	13	12	0			
				221	2	1

By Balance.	Due to the Society			Due by the Society		
	Rs	As	P	Rs	As	P
Members .	2,219	13	6	263	1	0
Subscribers	43	8	0		...	.
Employés ..	30	0	0	100	0	0
Arabic and Persian Manuscripts Fund	201	12	0			
Sanskrit Manuscripts Fund	234	8	0		...	
Miscellaneous	460	0	3	122	11	6
	3,189	9	9	485	12	6

2,703 13 3

Total Rs 29,074 10 4

J A Chapman,

Honorary Treasurer,

Asiatic Society of Bengal

STATEMENT

1906. *Invest-*

Dr.

		Value.			Cost.		
		Rs.	As.	P.	Rs.	As.	P.
To Balance from last Report ...	...	1,96,300	0	0	1,95,976	3	1
Bank's Brokerage and Commission	..	..			35	5	10
Total Rs.	...	1,96,300	0	0	1,96,011	8	11

Funds.		Permanent.						Temporary.						Total Cost.		
		Value.			Cost.			Value.			Cost.					
		Rs.	A	P.	Rs.	A.	P.	Rs	A	P	Rs.	A.	P.	Rs.	A.	P.
Asiatic Society	...	1,51,550	0	0	1,51,093	6	8	31,750	0	0	31,893	10	4	1,82,987	1	0
Trust Fund	...	1,400	0	0	1,339	6	0	...	..	..	...	..	..	1,389	6	0
		1,52,950	0	0	1,52,432	12	8	31,750	0	0	31,893	10		1,84,326	7	0

STATEMENT

1906. *Trust*

Dr.

					Rs.	As.	P.
To Pension	...	...	...	...	44	0	0
		Balance	...	...	1,461	11	10
		Total Rs.		...	1,505	11	10

No. 7.

ment. *1906.*

Cr.

	Value.			Cost.		
	Rs.	As.	P.	Rs.	As.	P.
By Sale	11,600	0	0	11,281	10	11
„ Loss on Government paper sold ...	...			453	7	0
Balance ...	1,84 700	0	0	1,84,326	7	0
TOTAL Rs. ...	1,96,300	0	0	1,96,011	8	11

J. A. CHAPMAN,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 8.

Fund. *1906.*

Cr.

	Rs.	As.	P.
By Balance from last Report	1,456	11	10
„ Interest on Investment	49	0	0
TOTAL Rs. ...	1,505	11	10

J. A. CHAPMAN,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1906. *Cash*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Report				2,644	12	10
Receipts.						
To Asiatic Society	18,330	4	0			
„ Oriental Publication Fund	9,788	5	0			
„ Sanskrit Manuscript Fund	3,208	0	0			
„ Arabic and Persian Manuscript Fund ...	12,000	0	0			
„ Personal Account	26,149	11	0			
„ Investment	11,685	1	11			
„ Trust Fund	49	0	0			
				81,210	5	11
Total Rs.				83,855	2	9

STATEMENT

1906. *Balance*

LIABILITIES.

	Rs	As.	P.	Rs.	As.	P.
Asiatic Society	1,79,519	3	3			
Oriental Publication Fund ...	1,335	14	9			
Sanskrit Manuscript Fund	3,643	8	11			
Arabic and Persian Manuscript Fund ...	1,985	8	9			
Bardic Chronicles Manuscript Fund ...	2,400	0	0			
Trust Fund	1,461	11	10			
				1,90,345	15	6
Total Rs. ...				1,90,345	15	6

We have examined the above Balance Sheet, and the appended detailed Accounts with the Books and vouchers presented to us, and certify that it is in accordance therewith, correctly setting forth the position of the Society as at the 31st December, 1906.

Calcutta,
5th February, 1907.

Meugens, King & Simson,
Chartered Accountants,
Auditors.

No. 9.

Account. *1906.*

Cr.

EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
By Asiatic Society	45,187	4	2			
„ Oriental Publication Fund	13,672	6	9			
„ Sanskrit Manuscript Fund ...	2,695	9	6			
„ Arabic and Persian Manuscript Fund ...	14,473	7	3			
„ Personal Account	4,431	6	0			
„ Investment	35	5	10			
„ Trust Fund	44	0	0			
				80,539	7	6
Balance				3,315	11	8
TOTAL Rs. ...				83,855	2	9

J. A. CHAPMAN,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 10.

Sheet. *1906.*

ASSETS.

	Rs.	As.	P.	Rs.	As.	P.
Cash	3,315	11	8			
Personal Account	2,703	13	3			
Investment	1,84,326	7	0			
				1,90,345	15	6
Government Pro. Note at Bank of Bengal's Safe Custody Account Cashier's Security Deposit Rs. 500				..		
TOTAL Rs. ...				1,90,345	15	6

J. A. CHAPMAN,
Honorary Treasurer,
Asiatic Society of Bengal.

MARCH, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 6th March, 1907, at 9-15 P.M.

The HON. MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., President, in the chair.

The following members were present:—

Dr. N. Annandale, Babu Rakhal Das Banerji, Mr. I. H. Burkill, Babu Monmohan Chakravarti, Mr. J. A. Cunningham, Mr. L. L. Fermor, Mr. D. Hooper, Mr. W. W. Hornell, Mr. C. Little, Mr. S. C. Mahalanobis, Dr. H. H. Mann, Mr. R. D. Mehta, Capt. C. C. R. Murphy, Lt.-Col. D. C. Phillott, Dr. P C. Ray, Rai Ram Brahma Sanyal, Bahadur, Mahamahopadhyaya Haraprasad Shastri, Pandit Yogesa Chandra Sastri-Sankhyaratna-Vedatirtha, Dr. G. Thibaut, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. Vredenburg, Rev. A. W. Young.

Visitors:—Babu Bidhubhusana Dutta, Babu Atul Chandra Ganguli, Mr. C. A. Mackenzie, and Babu Satis Chandra Mukerjee.

The minutes of the last meeting were read and confirmed.

Thirty-six presentations were announced.

The General Secretary announced that Babu Upendra Nath Sen had expressed a wish to withdraw from the Society.

The General Secretary read the names of the following gentlemen who had been appointed to serve on the various Committees for the present year:—

Finance Committee

Dr. N. Annandale.
Mr. I. H. Burkill.
Mr. W. K. Dods.
Mr. T. H. Holland.
Major F. P. Maynard.
Mahamahopadhyaya Haraprasad Shastri.

Library Committee

Dr. N. Annandale.
Mr. J. A. Cunningham.
Mr. J. N. Das-Gupta.
Mr. Hari Nath De.
Mr. L. L. Fermor.
Mr. H. G. Graves.

Mr. H. H. Hayden.
Mr. D. Hooper.
Mr. T. H. D. La Touche.
Dr. H. H. Mann.
Mahamahopadhyaya Haraprasad Shastri.
Dr. G. Thibaut.
Mr. E. Thornton.

Philological Committee.

Babu Muralidhar Banerji.
Babu Monmohan Chakravarti.
Mr. Hari Nath De.
Mr. E. A. Gait.
Lieut.-Colonel D. C. Phillott.
Acharya Satyavrata Samasrami.
Pandit Yogesa Chandra Shastri-Sankhyaratna-Vedatirtha.
Mahamahopadhyaya Haraprasad Shastri.
Mahamahopadhyaya Chandra Kanta Tarkalankara.
Dr. G. Thibaut.
Babu Nagendra Nath Vasu.
Mr. A. Venis.
Mahamahopadhyaya Satis Chandra Vidyabhusana.

The President announced that Lt.-Col. D. C. Phillott had been appointed officer in charge for the Search for Arabic and Persian MSS. during the absence of Dr. E. D. Ross.

The following seven gentlemen were ballotted for as Ordinary Members:—

Mr. C. B. N. Cama, I.C.S., proposed by Lt.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Captain R. E. Lloyd*, I M.S., Surgeon Naturalist, Marine Survey of India, proposed by Lt.-Col D. C. Phillott, seconded by Dr. N. Annandale; *Rev. Walter Kelly Firminger*, M.A., B.D., Chaplain, Bengal Establishment, proposed by Lt.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Babu Roormall Goenka*, Landholder and Merchant, proposed by Babu Amritalal Vasu, seconded by Babu Akshaya Kumar Maitra; *Pandit Jwala Sahai*, Retired Nazim of Dig Bharatpur State, proposed by Lt.-Col. D. C. Phillott, seconded by Babu Monmohan Chakravarti; *Babu Prafulla Chandra Ghosh*, M.A., Deputy Magistrate, Howrah, proposed by Babu Monmohan Chakravarti, seconded by Lt.-Col. D. C. Phillott; and *Maulavi S. Sayf-ud-Din Ahmed*, B.A., proposed by Mahamahopadhyaya Satis Chandra Vidyabhusana, seconded by Dr. M. M. Masoom.

Mr. E. Vredenburg exhibited some specimens of a fossil Echinoid, *Breynia multituberculata*, Vredenburg, together with a recent species of the same genus, *Breynia Vredenburgi*, Anderson.

The following papers were read :—

1. *Note on the Saker or Cherrug Falcon* (F. cherrug), *its Eastern names, habits and use in Falconry.—By* LT.-COL. D. C. PHILLOTT.

2. *Some Birds and other animals that have been metamorphosed (being an extract from the Kitabu'l-Jamharah filmi'l-Bazyarah, an Arabic MS., No. 865, in the library of the Asiatic Society of Bengal).—By* LT.-COL. D. C. PHILLOTT and R. F. AZOO.

3. *Note on Shunqar Falcon.—By* LT.-COL. D. C. PHILLOTT.

4. *Notes on the distribution of* Macacus arctoides, *Geoff.—By* RAI RAM BRAHMA SANYAL, BAHADUR.

These three papers have been published in the *Journal* and *Proceedings* for February, 1907.

5. *Well-waters from Hadhramaut, Arabia.—By* D. HOOPER.

6. *Notes from the Chemical Laboratory of the Presidency College. Note No. I.—A new method of preparing Mercurous Iodide.—By* PANCHANAN NEOGI, M.A. *Communicated by* DR. P. C. RAY.

7. *Notes from the Chemical Laboratory of the Presidency College. Note No. II.—Nitro-ethane as a solvent of Iodoform.—By* PANCHANAN NEOGI, M.A. *Communicated by* DR. P. C. RAY.

8. *Notes from the Chemical Laboratory of the Presidency College. Note No. III.—On Silver-Mercuroso-Mercuric Nitrate.—By* DR. P. C. RAY.

These three papers have been published in the *Journal* and *Proceedings* for February, 1907.

9. *Notes from the Chemical Laboratory of the Presidency College Note No. IV.—The Electrical State of Nascent Gases. Preliminary note.—By* J. A. CUNNINGHAM *and* SATIS CHANDRA MUKERJEE.

10. *Notes from the Chemical Laboratory of the Presidency College. Note No. V.—Reactions at low temperatures. Part I.—Aliphatic Iodochlorides.—By* BIDHUBHUSANA DUTTA, M.A. *Communicated by Prof.* J. A. CUNNINGHAM.

11. *Some notes on the Vedic Sacrifices.—By* BHAVESA CHANDRA BANERJEE, M.A. *Communicated by* MAHAMAHOPADHYAYA HARAPRASAD SHASTRI.

12. *Method of catching wild fowls and other birds in the Punjab, Sindh and Kashmir.—By* LT.-COL. D. C. PHILLOTT.

13. *Notes on some clay tablets from the Malaya Peninsula.—By* RAKHAL DAS BANERJEE. *With an introductory note by* DR. N. ANNANDALE.

These papers will be published in a subsequent number of the *Journal* and *Proceedings.*

The Adjourned Meeting of the Society (Medical Section) was held at the Society's rooms on Wednesday, February 13th, 1907, at 9-15 P.M.

MAJOR W. J. BUCHANAN, I.M.S., in the chair.

The following members were present:—

Lt.-Col. E. H. Brown, I.M.S., Lt.-Col. G. F. A. Harris, I.M.S., Major W. D. Hayward, I.M.S., Dr. W. C. Hossack, Dr. E. A. Houseman, Captain J. C. H. Leicester, I.M.S., Dr. M. M. Masoom, Captain D. McCay, I.M.S., Captain J. W. D. Megaw, I.M.S., Major D. M. Moir, I.MS., Major J. Mulvany, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitor :—Dr. J. Neild Cook.

The minutes of the last meeting were read and confirmed.

Major Maynard showed a case of sarcoma of the thigh.

Captain Leicester read some clinical notes on cases of appendicitis. Messrs. Maynard, Harris, Moir, Hossack, Hayward, Neild Cook and Megaw discussed the notes.

Major Moir read notes on lumbar puncture and injection of antitoxin in a case of tetanus. Case notes taken by Assistant Surgeon Lolit Mohun Banerjee.

The discussion on Colonel Harold Brown's paper on "Cerebrospinal meningitis" was resumed. Messrs. Buchanan, Harris, Moir, Hossack and Megaw took part in it, and Colonel Brown replied.

APRIL, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 3rd April, 1907, at 9-15 P.M.

The HON. MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., President, in the chair.

The following members were present.—

Mr. R P. Ashton, Babu Rakhal Das Banerjee, Mr. P. J. Brühl, Mr. J. A. Chapman, Mr. J. A. Cunningham, Rai Sarat Chandra Das, Bahadur, Mr. L. L. Fermor, Mr. H. G. Graves, Mr. H. E. Kempthorne, Mr. C. H. Kesteven, Kumar Ramessur Maliah, Major F. P. Maynard, I.M.S., Dr. J. E. Panioty, Lt.-Col. D. C. Phillott, Pandit Yogesa Chandra Sastri-Samkhyaratna-Vedatirtha, Mr. H. E. Stapleton, Dr. M. W. Travers, Dr. G. Thibaut, Mahamahopadhyaya Haraprasad Shastri, Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. E. C. Woodley

Visitors:—Mr. W. A. K. Christie, Babu Bidhu Bhushan Datta, Babu Atul Chandra Ganguli, Captain J. H. Morgan, Babu Phani Bhusan Neogi, and Lieut. H. B. Nutting.

The minutes of the last meeting were read and confirmed.

One hundred and sixty-eight presentations were announced

The General Secretary announced that the Hon. Mr. C. G. H. Allen and Mr. W. Parsons had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Lieut.-General Sir H. E. L. Thuillier, Kt. (a Life Member), and Sir Michael Foster, M.B, F.R.S. (an Honorary Member) of the Society.

The President announced that in accordance with Rule 38 of the Society's Rules, the name of Kumar Satindra Dev Rai Mahasaya had been posted up as a defaulting member since the last General Meeting, and his name had now been removed from the member-list.

The following eight gentlemen were ballotted for as Ordinary Members:—

Captain Maxwell Mackelvie, I.M.S., Resident Physician, Medical College, proposed by Major F. P. Maynard, I.M.S., seconded by Major W. J Buchanan, I.M.S.; *Lieut. R. E. Bate*, 27th Punjabis, Multan, proposed by the Hon. Mr. E. D. Maclagan, seconded by Lt.-Col. D. C. Phillott; *Mr. Tarini Kumar Ghose*, B.A., Late Inspector-General of Registration, Bengal, proposed by Babu Monmohan

Chakravarti, seconded by Lt.-Col. D. C. Phillott; *Babu Satyendra Nath Bhadra*, M.A., Professor, Dacca College, proposed by Mr. Hari Nath De, seconded by Lt.-Col. D. C. Phillott; *Captain Hugh Stewart*, I.A., Assistant Political Agent, Loralai, Baluchistan, proposed by Lt.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Major J. T. Calvert*, I.M.S., proposed by Major F. P. Maynard, I.M.S., seconded by Major W. J. Buchanan, I.M.S.; *Lieut. A. Denham White*, I.M.S., M.B., B.S. (London), Medical Officer, 13th Rajputs, Alipur, proposed by Major F. P. Maynard, I.M.S., seconded by Major W. J. Buchanan, I.M.S.; and *Maulavi A. F. M. Abdul Ali*, Deputy Magistrate, Patuakhali, Backergunj, proposed by Mr. J. A. Chapman, seconded by Lt.-Col. D. C. Phillott.

The General Secretary read the following communication from the Rev. H. Hosten, S.J.:—

Saint Francis Xavier and Tibet (?).

Can any of our Tibetan or Japanese scholars in Calcutta help us to solve the interesting geographical puzzle contained in the following extract from a letter of St. Francis Xavier, dated Cochin, Jan. 20th, 1549[1]:—

"Would to God that numerous labourers of the Society[2] may later go to China, and from China to the great schools called Chynguinguo, beyond China and Tartao.[3] From what Paul de Santa-Fé[4] has told us, Tartao, China and Japan follow the religious law taught at Chynguinguo. He does not know the language in which this law is written. It is a language proper thereunto, as Latin is with us. Hence he has not been able to inform us fully about what the printed books contain which deal with this law. When I shall have, please God, arrived in Japan, I shall write, with many details, what is contained in these books, which the Japanese say to have come down to them from God."

We think this is one of the earliest references to Tibet to be found in European writings subsequent to the Portuguese conquest. The geographical details contained in this extract point to Tibet, as also the mention of the great schools, a manifest allusion, in our opinion, to the great Tibetan lamaseries, the depositories of much of the ancient Sanskrit lore of the Buddhists.

Which is the Japanese equivalent of Tibet? Or, what does 'Chynguinguo' correspond to? No other reference to this mysterious country can be found in the life of the Saint.

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[1] Cf. *Fath. J. M. Cros, S.J., Saint François de Xavier.* Paris. V. Retaux. 1900, Vol. I, pp. 409, 410.

[2] The Society of Jesus.

[3] Tartary.

[4] A young Japanese who had come from Japan to Malacca, and from there to Goa, where he became a Christian at the College of Santa-Fé. He tells his own story in a letter from Goa, Nov. 29th, 1548. Cf. *Op. cit.*, Vol. I; pp. 418-22. He changed his name "Angero" to that of Paul de Santa-Fe.

Dr. N. Annandale exhibited specimens illustrating the fauna of certain brackish pools in the delta of the Ganges. This fauna has become isolated recently, probably within the last half century, and presents many features of interest. It includes typical freshwater Entomostraca as well as two Cirripedes (*Balanus amphitrite* and *B. patellaris*), the larvæ of a mosquito (*Anopheles rossii*), numerous freshwater fish and molluscs, a Hydrozoon (*Irene ceylonensis*), and an Actinian (*Metridium schillerianum*). The last is probably the most interesting form now occurring in the pools, as it appears to have undergone a very distinct change, both in structure and in habits, since it was described by the late Dr. F. Stoliczka thirty-nine years ago.

Mahamohopadhyaya Haraprasad Shastri exhibited a letter written by Mahesh Chandra to the renowned Naiyayika Raghunatha Siromani, Tarkikacudamani, the leader of Sanskrit Renaissance in Bengal, and read a short note on it.

The following papers were read :—

1. *The Birds' complaint before Solomon: being an extract with a translation from the "Kitāb^{u} 'l-Jamharah fī 'ilmi 'l-Bazyarah."*—*By* Lt.-Col. D. C. Phillott *and* R. F. Azoo.

This paper has been published in the *Journal* and *Proceedings* for March 1907.

2. *Things which the owners of Hawks should avoid.*—*By* Lt.-Col. D. C. Phillott *and* R. F. Azoo.

This paper will be published in a subsequent number of the *Journal* and *Proceedings.*

3. *Tarīkh-i-Nuṣrat jangi.*—*By* Hari Nath De.

This paper will be published in the *Memoirs.*

4. *Note on the absorption of gases, vapours and substances from solution by solids and amorphous substances.*—*By* M. W. Travers.

5. *Indian Logic as preserved in Tibet, No. 2.*—*By* Mahamahopadhyay Satis Chandra Vidyabhusana.

6. *The Conquest of Chatgaon, 1666 A.D.*—*By* Jadu Nath Sarkar.

7. *The Feringi Pirates of Chatgaon, 1665 A.D.*—*By* Jadu Nath Sarkar.

8. *A Kharosthi Copperplate Incription from Taxila or Taksasila.*—*By* Mahamahopadhyaya Haraprasad Shastri.

9. *Rhyming letters of Aurangzib.*—*By* Jadu Nath Sarkar.

These papers will be published in a subsequent number of the *Journal* and *Proceedings.*

The Adjourned Meeting of the Society (Medical Section) was held at the Society's rooms on Wednesday, March 13th, 1907, at 9-15 P.M.

LT.-COLONEL G. F. A. HARRIS, I.M.S., in the chair.

The following members were present:—

Major W. J. Buchanan, I.M.S., Dr. Adrian Caddy, Lt.-Col. F. J. Drury, I.M.S., Dr. W. C. Hossack, Dr. E. A. Houseman, Captain D. McCay, I.M.S., Captain J. W. D. Megaw, I.M.S., Major J. Mulvany, I.M.S , Capt. J. G. R. Murray, I.M.S., Major F. O'Kinealy, I.M.S., Dr. J. E. Panioty, Major J. C. Vaughan, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors:—Miss Baumler, M.D., Major J. T. Calvert, I.M.S., Dr. J. Neild Cook, Lt.-Col. E. F. H. Dobson, I.M.S., Captain M. Mackelvie, I.M.S., and Dr. Carrington Sykes.

The minutes of the previous meeting were read and confirmed.

1. Major O'Kinealy, I.M.S., showed a specimen of Cysticercus cellulosæ removed from an eye

2. Major Maynard and Captain McCay demonstrated Thorner's electric ophthalmoscope.

3. Major Maynard showed a gauze cage for use over the penis after skin-grafting in elephantiasis operations, with the grafts left undressed.

APRIL, 1907.

The Adjourned Meeting of the Society (Medical Section) was held at the Society's rooms on Wednesday, April 10th, 1907, at 9-15 P.M.

LIEUT.-COLONEL F. J. DRURY, I.M.S., in the chair.

The following members were present:—

Captain T. P. Connor, I.M.S., Dr. H. C. Garth, Major W. D. Hayward, I.M.S., Dr. W. C. Hossack, Dr. E. A. Houseman, Dr. W. W. Kennedy, Captain D. McCoy, I.M.S., Captain M. Mackelvie, I.M.S., Captain J. W. D. Megaw, I.M.S., Captain J. G. R. Murray, I.M.S., Dr. J. E. Panioty, Major J. C. S. Vaughan, I.M.S., Lt. A. Denham White, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors:—Captain I. A. Black, I.M.S., Dr. J. Neild Cook, Colonel J. G. Harwood, R.A.M.C., and Lieut. R. K. White, I.M.S.

The minutes of the last meeting were read and confirmed.

Major Vaughan, I.M.S., read a paper on "Small-pox in Calcutta."

Messrs. Drury, Neild Cook, Murray and Maynard took part in the discussion, and Major Vaughan replied.

MAY, 1907.

The Adjourned Meeting of the Society (Medical Section) was held at the Society's rooms on Wednesday, May 8th, 1907, at 9-15 P.M.

Lieut.-Colonel F. J. Drury, I.M.S., in the chair.

The following members were present:—

Dr. Adrian Caddy, Major J. T. Calvert, I.M.S., Captain F. P. Connor, I.M.S., Dr. H. Finck, Dr. W. C. Hossack, Dr. W. W. Kennedy, Captain M. Mackelvie, I.M.S., Captain J. W. Megaw, I.M.S., Major D. M. Moir, I.M.S., Dr. J. E. Panioty, Major J. C. Vaughan, I.M.S., Lieut. A. D. White, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitor:—Lieut.-Col. C. R. M. Green, I.M.S.

The minutes of the last meeting were read and confirmed.

1. Cases of excision of the tongue and elephantiasis were shown by Major Moir, I.M.S.

2. Dr. Adrian Caddy read a paper on "Internal derangements of the knee-joint and their treatment." Major Moir and Captain Connor discussed the paper, and Dr. Caddy replied.

3. Captain Megaw showed several stereoscopic photographs of diseased conditions.

4. Major Maynard showed a specimen of Cystoadenoma of the breast with microscopic section by Dr. D. N. Moitra.

JUNE, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 5th June, 1907, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., President, in the chair.

The following members were present:—

Dr. N. Annandale, Mr. L. L. Fermor, Mr. D. Hooper, Dr. H. H. Mann, Babu Panchanan Mukhopadhyaya, Pandit Promotha Nath Tarkabhusan, Mr. G. Thibaut, C.I.E., Pandit Rajendra Nath Vidyabhusana, Rev. E. C. Woodley, and Rev. A. W. Young.

Visitors:—Mr. H. S. Cox, Mr. A. M. Heron, Mr. D. La Touche, and Mr. H. Walker.

The President announced, with regret, the death of Major D. M. Moir, I.M.S., a member of the Society. As a token of respect, the papers on the agenda were taken as read and the meeting adjourned after the formal business and the election of new members.

The minutes of the last meeting were read and confirmed.

Two hundred and seventy-one presentations were announced.

The Council reported that no meeting was held in May as a quorum of members was not present.

The following ten gentlemen were ballotted for as Ordinary Members:—

Lt.-Col. M. J. Kelawala, I.M.S., Bangalore, proposed by Lieut.-Col. D. C. Phillott, seconded by Captain C. L. Peart, I.A.; *Mr. Colin Harington Browning*, M.A., Principal, Dacca College, proposed by Mr. H. E. Stapleton, seconded by Lieut.-Col. D. C. Phillott; *Captain J. H. Morgan*, I.A., Rawalpindi, proposed by Lieut.-Col. D. C. Phillott, seconded by Lieut. J. C. More, I.A.; *Col. J. G. Harwood*, F.R C S. (Edin.), R.A.M.C., Principal Medical Officer, Presidency and Assam Brigades, proposed by Major F. P. Maynard, I.M.S., seconded by Major W. J. Buchanan, I.M.S.; Mr. *Harold Wright*, A.M.I.C.E., Calcutta, proposed by Mr. H. G. Graves, seconded by Lieut.-Col. D. C. Phillott; *Lieut. J. H. Stewart*, I.M.S., Medical Officer, Gyantse, Tibet, proposed by Dr. N. Annandale, seconded by Lieut.-Col. D. C. Phillott; *Dr. G. Orissa Taylor*, Chittagong Hills, proposed by Mr. D. Hooper, seconded by Dr. H. H. Mann; *Lieut.-Col. C. R. M. Green*, F.R.C.S., I.M.S., proposed by Major F. P. Maynard, I.M.S., seconded by Major W. J. Buchanan, I.M.S.; *Mr. R. C. J. Swinhoe*, Solicitor, Mandalay, proposed by Mr. T. H. D. La Touche, seconded by Lieut.-Col. D. C. Phillott; and *Dr. Muhammud Abdulla Al-Mamun Suhraworthy*, M.A., LL.D., proposed by Mr. Hari Nath De, seconded by Lieut.-Col. D. C. Phillott.

The General Secretary read a letter from Dr. N. Annandale, relative to his paper on the Freshwater Polyzoa of India, published in the "Journal and Proceedings" of the Society for February, 1907:—

"In my recent paper on the Freshwater Polyzoa of India I stated (*Journ. Asiat. Soc. Bengal*, 1907, p. 92) that Hyatt's *Pectinatella carteri* had not been re-discovered since its description. In this I was mistaken, for Dr. Stuhlman found statoblasts of the same species in German East Africa in 1890 (Meissner "*Die Moosthiere Öst Africas,*" 1895). Rousselet, who placed the species in his new genus *Lophopodella*, re-examined Carter's preparations of statoblasts in the British Museum in 1904 (*Journ. Quekett Micro. Club*, 1904, p. 51). I am indebted to Mr. Rousselet for a copy of his paper, but I have not been able to refer to Meissner's work on the East African Polyzoa (or Bryozoa, as the Germans prefer to call them).

"I shall be much obliged if you will insert this note in the 'Proceedings' of the Society as soon as possible, for my former statement is apt to mislead zoologists in India."

The following papers were taken as read:—

1. *Note on the Shahin Falcon* (Falco peregrinator *and* F. barbarus).—*By* LIEUT.-COLONEL D. C. PHILLOTT.

This paper has been published in the *Journal* and *Proceedings* for May 1907.

2. *An Abnormal Branch of the Mango* (Mangifera Indica, Linn.).—*By* I. H. BURKILL and GIRISH CHANDRA BOSE.

3. *Note on the Red-headed Merlin* (Æsalon chiquera).—*By* LIEUT.-COLONEL D. C. PHILLOTT.

4. *Some Pushtu Folk Tales collected by* MR. D. DONALD, *Commandant of the Border Military Police and Saman Rifles, Kohat.*

5. *Magnetic Induction in Spheroids.*—*By* D. N. MALLICK, B.A., B.SC. *Communicated by the President.*

The fourth and the fifth papers will be published in a subsequent number of the *Journal*.

6. *The fats of Garcinia species.*—*By* D. HOOPER.

This paper has been published in the *Journal* and *Proceedings* in May 1907.

7. *A Fish trap from Northern Arakan.*—*By* I. H. BURKILL.

8. *Note on the History of the Caste System.*—*By* A. M. T. JACKSON, I.C.S.

These papers will be published in a subsequent number of the *Journal*.

JULY, 1907.

The Monthly General Meeting of the Asiatic Society was held on Wednesday, the 3rd July, 1907, at 9-15 P.M.

The HON. MR. JUSTICE ASHUTOSH MUKHOPADHYAYA, M.A., D.L., President, in the Chair.

The following members were present:—

Dr. N. Annandale, Mr. I. H. Burkill, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Babu Amulya Charan Ghosh Vidyabhusana, Mr. H. G. Graves, Mr. D. Hooper, Dr. W. C. Hossack, Lt.-Colonel D. C. Phillott, Mr. G. Thibaut, C.I.E., Mr. G. H. Tipper. Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. E. C. Woodley and Rev. A. W. Young.

Visitor:—Babu Devabrata Mukherjee.

The minutes of the last meeting were read and confirmed.

Fifty-two presentations were announced.

The General Secretary announced that Mr. F. J. V. Minchin and Mr. Norman McLeod had expressed a wish to withdraw from the Society.

The General Secretary also announced the death of Mr. Patrick Doyle and Babu Gerindra Nath Dutt, Ordinary Members of the Society.

The President announced that the following seven gentlemen have not paid their entrance fees; their elections therefore, have, under Rule 9, become null and void:—

Mr. M. Krishnamachariar.
Dr. A. M. Leake.
Captain G. B. Riddick, R.A.M.C.
Pandit Gauri Dutta Misra Vidyabhusana.
Captain D. Harvey, R.A.M.C.
Captain W. W. Clemesha, I.M.S.
Sri Kripamaya Ananga Bhimakishori Gajapati Maharaj Dev.

The President also announced that Captain C. L. Peart, I.A., had carried on the duties of the General Secretary and Philological Secretary for six weeks, and that Lieut.-Colonel D. C. Phillott had resumed the duties on his return.

The following were ballotted for as Ordinary Members :—

Mr. John Coggin Brown, Assistant Superintendent, Geological Survey of India, proposed by Mr. L. L. Fermor, seconded by Lieut.-Colonel D. C. Phillott; *Mr. H. Walker*, Assistant Superintendent, Geological Survey of India, proposed by Mr. L. L. Fermor, seconded by Lieut.-Colonel D. C. Phillott; *Mr. G. deP. Cotter*, Assistant Superintendent, Geological Survey of India, proposed by Mr. L. L. Fermor, seconded by Lieut.-Colonel D. C. Phillott; *Mr. W. A. K. Christie*, Chemist, Geological Survey of India, proposed by Mr. L. L. Fermor, seconded by Lieut.-Colonel D. C. Phillott; *Babu Mahendra Nath De*, M.A., B.Sc., Professor, Bengal National College, Calcutta, proposed by Babu Amulya Charan Vidyabhusana, seconded by Mahamahopadhyaya Satis Chandra Vidyabhusana; *Miss Mary Y. Corbett*, Church of Scotland Mission, Darjeeling, proposed by Mr. E. Mackenzie, seconded by Lieut.-Colonel D. C. Phillott; and Mr. *W. W. K. Page*, Solicitor, Calcutta, proposed by Mr. J. A. Chapman, seconded by Lieut.-Colonel D. C. Phillott.

The following papers were read :—

1. *Mundari Poetry, Music and Dances.—By* REV. FR. J. HOFFMANN, S.J. *Communicated by the* HON. MR. E. A. GAIT.

This paper will be published in the *Memoirs.*

2. *An Old Christian Cemetery in Haiderabad.—By* MAJOR W. HAIG.

This paper will be published in a subsequent number of the *Journal.*

3. *Note on the Bidri ware of Purneah.—By* R. J. HIRST.

4. *Seven stories from the Nafḥatᵘ 'l-Yaman; edited and translated by* LIEUT.-COLONEL D. C. PHILLOTT and R. F. AZOO.

5. *Notes on the Pollination of Flowers in India.—Note No. 4. On Cotton in Behar.—By* I. H. BURKILL.

6. *Indian Logic as preserved in Tibet.—No. 3. By* MAHAMAHOPADHYAYA SATIS CHANDRA VIDYABHUSANA, M.A., M.R.A.S.

Reviews on Books.

Western Tibet and the British Borderland. By CHARLES A. SHERRING, I.C.S. (London, Edward Arnold, 1906.)

Among the many publications recently called forth by the British Mission to Tibet, few have dealt with the western portion of the province which marches with Kashmir and the British Borderland. Lhasa, in Centeral Tibet, so long veiled in mystery as the forbidden city, the final goal of the Mission, naturally

absorbed the chief interest. Nari on Western Tibet, some seven hundred miles away, across the Marjum Pass, lay outside the immediate sphere of operations still less known and unexplored. Yet it is here where British and Tibetan relations come into actual physical contact that the effects of the Mission will probably be most apparent in the near future. To this interesting country on the British Borderland Mr. Sherring has devoted his attention. As Deputy Commissioner of Almora, he has had unrivalled opportunities for acquiring information concerning all that relates to the Frontier, and the knowledge so gained he has recently supplemented by a tour to Western Tibet of which the interesting and informing book under review is the result.

Until two years ago few Europeans had crossed the Border into Western Tibet and fewer still had penetrated as far as Gartok its summer capital. In 1812 Hearsey and Moorcroft, travelling disguised as ascetics on a pilgrimage had reached the Mansarovar Lakes, but from that time onward until the present day, the jealousy with which the Tibetans guarded their mysterious bond against the foreigner well nigh completely prevented further exploration. It was not until the famous Treaty was signed at Lhasa on September 5th, 1904, that the first gap was made in the barrier of exclusiveness with which Tibet had been so long surrounded. Trade marts were to be opened at Gyantse, Yatung and Gartok, and the last named lying in the practically unknown country of Western Tibet, it was resolved to send out a small expedition as an offshoot of the Mission to report upon its suitability and possibilities as a trading centre. It thus happened that the first authorised entry of a British force into Western Tibet took place from the east, a two months' journey from Gyantse to Gartok, and not from the British Borderland which lies only some eighty miles from the summer capital. Somewhat in the nature of an experiment to prove how far the Tibetan authorities were prepared to carry out the terms of the Treaty, the expedition, so graphically described by Captain Rowling, was successfully carried through, opening out new possibilities in the relations between India and Western Tibet.

Mr. Sherring gives a fascinating account of this little known Borderland. From an ethnographical point of view, it is full of interest. It is a sacred country both to the Buddhists and to the Hindus. To Mount Kailas towering over twenty-one thousand feet heavenwards, the Tibetan looks as the home of his gods and the axis of the universe. For Kedarnath and Badrinath the Hindu cherishes equal veneration as the places where Shiva dwelt, and Krishna himself lived as an ascetic; while to Mount Kailas he, too, lifts his eyes as the heaven of Sun and the summit of all happiness. The surrounding world of eternal snow and giant mountain peaks, making their magnificent appeal to the imagination, is well calculated to inspire respect and veneration. Within a radius of some thirty miles rise no less than eighty peaks over twenty thousand feet high. It is a scene unsurpassed for grandeur. Here on this side the Border rises the great Nonda Devi, 25,689 feet high, the highest mountain throughout the world over which the British flag flies. Close by rivalling it in height and beauty stands Komet its sister peak, while away across the Border stretches the vast tableland of Western Tibet, averaging some 14,000 feet above sea level, the gigantic Gurla Mandhata away to the north-west towering above its countless peaks and summits. It is a romantic land far upon the roof of the world.

Of the superstitions, folklore, and manner of life of the people who inhabit this Borderland, Mr. Sherring has much to say. The Bhotias who dwell on the British side are described as intrepid traders and mountaineers with many fine manly qualities; while of the Tibetans who occupy the land beyond the Frontier, little has been known hitherto, and it is in the light thrown upon them and their manners and customs that the chief interest of Mr. Sherring's book lies. Of Ashol and the aboriginal Rajas or Rawats, of the legends and superstitions of the holy land of the Buddhists and Hindus, of Tibetan and Bhotia death ceremonies, and of the officials and administration of Western Tibet much that is worthy of note is recorded. Special interest attaches to the description of the famous Mansarovar and Rakos Lakes and of Mount Kailas, the magnificent abode of the gods, the secrets of which have been so long closely guarded. Gartok itself is disappointing, having changed but little since the days when Moorcroft and Hearsey visited it nearly one hundred years ago. It consists only of some fifteen to twenty houses, mere mud huts built of rough sun-dried bricks. Only during the three months' residence of the Viceroys during the great annual fair, when the traders pitch their tents in vast array on the surrounding plateau, does Gartok awake to life.

An interesting chapter by Dr. T. G. Longstaff describes his attempt to climb Gurla Mandahata. Rising 25,350 feet above sea level it is probably the highest mountain in Tibet and to the climber furnished practically untrodden ground. Dr. Longstaff was accompanied by two alpine guides and succeeded in getting within fifteen hundred feet of the summit.

Mr. Sherring's book is profusely illustrated with excellent photographs of the scenes and peoples described and furnished with two useful maps. It should prove of interest alike to the student and the general reader.

F. B. BRADLEY-BIRT.

Old Chipped Stones of India. By A. C. LOGAN, I.C.S. (Calcutta, Thacker Spink and Co., 1906, pp. viii-lxxxv, 3 Pl.)

This valuable work is the first attempt that has been made to give a connected account of the large collections of Indian stone implements preserved in the Indian Museum and other collections, together with a discussion of their geological occurrence. The majority of the specimens described are "palæoliths." Several chapters deal with the stratigraphy of the various formations of Quaternary age with which the implements are associated, and their geographical distribution. A further chapter is devoted to the descriptions of the stones, which include "pointed ovals, discoids, scrapers, chopper," the latter being regarded by the author as the prototype of the neolithic "celt." In the concluding chapter, the author expounds his theories regarding the races of men that have left these ancient records of their industry. The various types of implements are beautifully illustrated from photographs by Mr. Garrick. Mr. Logan's excellent work will be welcomed by every geologist and anthropologist.

E. VREDENBURG.

The Adjourned Meeting of the Society (Medical Section) was held at the Society's rooms on Wednesday, July 10th, 1907, at 9·15 P.M.

LIEUT.-COLONEL F. J. DRURY, I.M.S., in the chair.

The following members were present:—

Lieut.-Colonel E. H. Brown, I.M.S., Dr. Adrian Caddy, Major J. T. Calvert, I.M.S., Captain F. P. Connor, I.M S., Lieut.-Colonel C R. M. Green, I.M.S., Dr. W. C. Hossack, Dr. E. Houseman, Captain D. McCay, I.M.S., Captain M. Mackelvie, I.M.S., Captain J. W. D. Megaw, I.M.S., Dr. J E. Panioty, Lieut. A. D. White, I.M.S , and Major F. P. Maynard, I M S., Honorary Secretary.

Visitors:—Dr. S. Brooke, Dr. O M. Eàkins, Dr. J. L. Hendley, Captain J. H. Murray, I.M.S., Major C. R. Stevens, I M.S.

The minutes of the last meeting were read and confirmed.

The following resolution, after some remarks by Colonel Drury, was proposed by the Honorary Secretary, seconded by Dr. Panioty and carried unanimously, and it was resolved that the Honorary Secretary do send a copy of it to Mrs. Moir.

Proposed by Major Maynard
Seconded by Dr. Panioty.

"The Medical Section of the Asiatic Society of Bengal desires to place on record their sense of the great loss they have sustained by the death of Major D. M. Moir, who was a most active member of the Section and who was held in the highest esteem."

CLINICAL EVENING.

Cases and specimens were shown by Lieut.-Colonel Brown, Capt. Connor, Major Stevens and Lieut.-Colonel Drury

AUGUST, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 7th August, 1907, at 9-15 P.M.

The HON. MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., President, was in the chair.

The following members were present:—

Dr. N. Annandale, Babu Rakhal Das Banerji, Mr. L. L. Fermor, Mr. D. Hooper, Mr. T. H. Holland, F.R.S., Captain C. C. R. Murphy, Mr. W. W. K. Page, Lieut.-Colonel D. C. Phillott, Rai Ram Brahma Sanyal, Bahadur, Mr. G. Thibaut, C.I.E., Mahamahopadhyaya Satis Chandra Vidyabhusana, and Rev. E. C. Woodley.

Visitor:—Kumar Kshitindra Dev Rai Mahasai.

The minutes of the last meeting were read and confirmed.

Sixty-nine presentations were announced.

The President laid on the table a copy of the "Popular Poetry of the Baluches" by M. Longworth Dames, to which he invited special attention, it being a scholarly and unique work.

The General Secretary reported the death of H. H. the Maharaja Pratap Narayan Singh of Ajodhya, an Ordinary Member.

The following five gentlemen were balloted for as Ordinary Members:—

Mr. W. McIntosh, Agent, Bank of Bengal, Hyderabad, proposed by Major W. Haig, seconded by Lieut.-Colonel D. C. Phillott; *Shah Munir Alam*, B.A., LL.B., Vakil, High Court, Upper-Provinces, proposed by Babu Pratapa Chandra Ghosha, seconded by Lieut.-Colonel D. C. Phillott; *Mr. H. H. Haines*, Principal, Imperial Forest College, Dehra Dun, proposed by Captain A. T. Gage, seconded by Mr. I. H. Burkill; *Mr. V. Subramania Iyer*, Instructor, Imperial Forest College, Dehra Dun, proposed by Captain A. T. Gage, seconded by Mr. I. H. Burkill; and *Lieut. S. Banking*, 46th. Punjabis, proposed by Lieut.-Colonel D. C. Phillott, seconded by Mr. Hari Nath De.

Dr. N. Annandale exhibited eggs of Anderson's Newt (*Tylototriton verrucosus*) from Kurseong in the E. Himalayas.

On behalf of Dr. E. J. Butler, photographs and botanical specimens were exhibited of a case of the double parasitism of *Viscum articulatum*, Burm., on *Loranthus vestitus*, Wall., on *Quercus incana*, Roxb., from Ranikhet, Kumaon, at 6,000 feet. The *Viscum* was a very vigorous individual, and had caused the death of the branch of the *Loranthus* beyond the point where it had fixed itself. Both parasites were producing fruit.

The following papers were read:—

1. *Anguillicarpus—a new genus of the Cruciferæ.—By* I. H. BURKILL.

2. *A variety of Ducrosia anethifolia, Boiss., from Baluchistan.—By* I. H. BURKILL.

3. *A note on Impatiens Balsamina, Linn., as a dye-plant.—By* I. H. BURKILL.

4. *Rock Drawings in the Banda District.—By* C. A. SILBERRAD.

5. *Note on the Blue or Common Heron* (Ardea cinerea).*—By* LIEUT.-COLONEL D. C. PHILLOTT.

6. *Pala Inscriptions in the Indian Museum.—By* NILMANI CHAKRAVARTI, M.A. *Communicated by* DR. N. ANNANDALE.

This paper will be published in a subsequent number of the *Journal* and *Proceedings*.

7. *The Samkhya Philosophy in the land of the Lamas.—By* MAHAMAHOPADHYAYA SATIS CHANDRA VIDYABHUSANA.

8. *Notes on the Indo-Scythian Coinage.—By* RAKHAL DAS BANERJI.

This paper will be published in the November number of the *Journal* and *Proceedings*.

The Adjourned Meeting of the Medical Section was held at the Society's Rooms, on Wednesday, August 14th, 1907, at 9-15 P.M.

MAJOR W. J. BUCHANAN, I.M.S., in the chair.

The following members were present:—

Captain F. P. Connor, I.M.S., Lieut.-Colonel C. R. M. Green, I.M.S., Major W. D. Hayward, I.M.S., Dr. W. C. Hossack, Captain M. Mackelvie, I.M.S., Captain D. McCay, I.M.S., Captain J. W. D. Megaw, I.M.S., Dr. J. E. Panioty, Major J. C. Vaughan, I.M.S., Lieut. A. D. White, I.M.S., Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors:—Asstt. Surgeon Madan Mohan Dutta, Dr. O. M. Eakins, Asstt. Surgeon Lalmohan Ghosal, Dr. G. W. Johnstone.

The minutes of the last meeting were read and confirmed.

A case of fractured patella, wired forty-three days after the injury, was shown by Major Maynard, I.M.S.

Bier's instruments for the treatment of inflammations by means of passive congestion, were shown, with some remarks by Major Maynard, I.M.S.

A paper was read on "Comparison of the Urinary Excretions in Europeans and Bengalis," by Captain D. McCay, M.B., I.M.S., Professor of Physiology, Medical College, Calcutta.

Drs. Buchanan, Megaw, Maynard, Johnstone, and Green took part in the discussion.

NOVEMBER, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 6th November, 1907, at 9-15 P.M.

G. Thibaut, Esq., Ph.D., C.I.E., in the chair.

The following members were present:—

Mr. I. H. Burkill, Mr. J. A. Chapman, Mr. A. W. Dentith, Mr. H. G. Graves, Mr. D. Hooper, Captain R. E. Lloyd, I.M.S., Lieut.-Colonel D. C. Phillott, Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. E. C. Woodley and Rev. A. W. Young.

The minutes of the last meeting were read and confirmed.

Two hundred and fourteen presentations were announced.

The General Secretary announced that the Rev. H. B. Hyde, and Sir J. A. Bourdillon had expressed a wish to withdraw from the Society.

The General Secretary also announced the death of Lieut.-Colonel H. J. Dyson, an Ordinary Member of the Society.

The Chairman announced that the Council had appointed Captain R. E. Lloyd, I.M.S., to act as Anthropological Secretary *vice* Dr. N. Annandale, on leave.

The following eight gentlemen were elected Ordinary Members during the recess, in accordance with Rule 7:—

Dr. Olin Eakins, M.D., Chief Medical Officer, New York Assurance, and Vice-Consul-General of the U. S. of America; *Mr. C. F. Jenkins, I.C.S.*, Officiating Joint Magistrate, Budaon, U. P.; *Baboo Pramoda Prakash Chatterji*; *Dr. A. Martin Leake, F.R.C.S., V.C.*, Chief Medical Officer, B.-N. Railway; *Captain C. M. Gibbon*, 89th Royal Irish Fusiliers; *Dr. Birendra Nath Ghosh, L.M.S.*, Medical Practitioner; *Rev. Preston Marshall Conner*, Philadelphia; and *Mr. Sri Ram Dixit, B.A.*, Secretary, Pratabgarh State, Rajputana.

The following gentleman was ballotted for as an Ordinary Member:—

Captain L. L. Hopper, Royal Artillery, Maymyo, Burma, proposed by Lieut.-Colonel D. C. Phillott, seconded by Captain R. E. Lloyd.

The following papers were read:—

1. *A note on Sign-, Gesture-, Code-, and Secret-language, etc.*—*By* LIEUT.-COLONEL D. C. PHILLOTT.

2. *Note on the Common English Merlin* (Aesalon regulus).—*By* LIEUT.-COLONEL D. C. PHILLOTT.

3. *On Hunting Dogs: being an extract from the* "*Kitāb*^{u} *'l-Jamharah fī 'ilm*^{i} *'l-Bazyarah.*"—*By* LIEUT.-COLONEL D. C. PHILLOTT *and* MR. R. F. AZOO.

4. *Indian Hawking-gloves.*—*By* LIEUT.-COLONEL D. C. PHILLOTT.

5. *A case of Lateral Floral Prolification of the Inflorescence of the Pine-apple* (Annas sativus, Schult. f.)—*By* A. T. GAGE.

6. *Note on Indian Hawk-bells.*—*By* LIEUT.-COLONEL D. C. PHILLOTT.

7. *Narnaul and its Buildings, Part I.*—*By* GHULAM YAZDANI. *Communicated by the Philological Secretary.*

These two papers have been published in the *Journal and Proceedings* for August, 1907.

8. *Gandhakuti—the Buddha's private abode.*—*By* H. C. NORMAN.

This paper will be published in a subsequent number of the *Journal.*

9. *Nyaya-pravesa, or the earliest work extant on Buddhist Logic by Dignaga.*—*By* MAHAMAHOPADHYAYA SATIS CHANDRA VIDYABHUSANA.

10. *An Arabic translation of Controversial Pamphlets in Urdu and Persian by Rafi Al-Khuli.*—*By* HARINATH DE.

This paper will be published in the *Memoirs.*

The Adjourned Meeting of the Medical Section was held at the Society's Rooms, on Wednesday, November 13th, 1907, at 9-15 P.M.

Dr. Arnold Caddy, M.D., F.R.C.S., in the chair.

The following members were present:—

Major J. T. Calvert, I.M.S., Captain F. P. Connor, I.M.S., Major W. D. Hayward, I.M.S., Dr. W. C. Hossack, Dr. E. R. Houseman, Captain R. E. Lloyd, I.M.S., Dr. M. M. Masoom, Captain D. McCay, I.M.S., Captain M. Mackelvie, I.M.S., Captain J. W. D. Megaw, I.M.S., Major J. Mulvany, I.M.S., Major L. Rogers, I.M.S., Lieut.-Colonel F. P. Maynard, I.M.S., Honorary Secretary.

Visitors.—Miss R. N. Cohen, Dr. W. M. Crake, Dr. T. F. Pearse, Captain H. E. Smith, I.M.S., Major C. R. Stevens, I.M.S., Asst. Surgeons Samal Ranjan Dass Gupta, Saurendra Kumar Majumdar, Jotindra Nath Moitra, Charu Chandra Sinha.

1. Lt.-Col. Maynard showed cases of (1) Angioma of the thigh; (2) infantile scurvy; (3) high myopia (20 D) operated upon by Fukala's method.

Major C. R. Stevens showed cases of (1) Wrist injury with skiagrams; (2) a patient from whom a sarcomatous kidney had been removed by transperitoneal operation; (3) faultily united fracture of leg corrected by the use of an aluminium plate and screws.

Major Calvert showed a child operated upon by abdominal section for obstruction due to impaction with 37 round worms.

2. Major Leonard Rogers, I.M.S., read a "Note on the relationship of the incidence of heat-stroke to meteorological conditions."

Drs. Caddy, Hossack, Stevens, and Pearse took part in the discussion, and Major Rogers replied.

DECEMBER, 1907.

The Monthly General Meeting of the Society was held on Wednesday, the 4th December, 1907, at 9-15 P.M.

Babu Monmohan Chakravarti, M.A., B.L., in the chair.

The following members were present:—

Dr. N. Annandale, Babu Rakhal Das Banerji, Mr. J. A. Chapman, Mr. B. L. Chaudhuri, Dr. Birendra Nath Ghosh, Mr. H. G. Graves, Mr. T. H. Holland, Mr. D. Hooper, Mr. C. H. Kesteven, Lieut.-Colonel D. C. Phillott, Major L. Rogers, I.M.S., Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. Vredenburg, Mr. H. Walker, and Rev. E. C. Woodley.

Visitors.—Mr. F. Carter, Mr. V. J. Esch, Mr. W. Grossmann, Mr. A. C. R. de Righi and Mr M. Stuart.

The minutes of the last meeting were read and confirmed.

One hundred and twenty-two presentations were announced.

The General Secretary announced that Mr. H. E. Kempthorne had expressed a wish to withdraw from the Society.

The following seven candidates were ballotted for as Ordinary Members:—

Miss R. Cohen, M.B., F.R.C.S., Superintendent, Lady Dufferin Hospital, Calcutta, proposed by Lieut.-Colonel F. P. Maynard, seconded by Lieut.-Colonel D. C. Phillott; *Major C. R. Stevens*, M.D., F.R.C.S., I M.S., Professor of Anatomy, Medical College, Calcutta, proposed by Lieut.-Colonel F P. Maynard, seconded by Lieut.-Colonel D. C. Phillott; *Major J. Manners-Smith*, Resident in Nepal, Katmandu, proposed by Lieut.-Colonel D. C. Phillott, seconded by Dr. N. Annandale; *Mr. J. H. Lindsay*, I C.S., Sewan, proposed by Mr. I. H. Burkill, seconded by Captain J. W. D. Megaw; *Mr. J. H Little*, Assistant Master, Victoria School, Kurseong, proposed by Lieut.-Colonel D. C. Phillott, seconded by Captain R. E. Lloyd; *Dr. T. Frederick Pearse*, M.D., D.P.H., F.R.C.S., Medical Officer of Health, Calcutta, proposed by Lieut -Colonel F. P. Maynard, seconded by Lieut.-Colonel D. C. Phillott; and *Mr. H. Rosker James*, M.A., Bengal Education Service, proposed by Lieut.-Colonel F. P. Maynard, seconded by Mr. J. A. Cunningham.

Mahamahopadhyaya Satis Chandra Vidyabhusana exhibited a photograph of a painting of Dignaga, the Father of Mediæval Logic.

Mr. A. C. Rigo de Righi gave an illustrated lantern lecture and exhibited certain Tibetan Curiosities.

The following papers were read:—

1. *Hetu-cakra-hamaru or Dignaga's Wheel of Reasons—recovered from Labrang in Sikkim.—By* MAHAMAHOPADHYAYA SATIS CHANDRA VIDYABHUSANA.

2. *On three varieties of Corchorus capsularis, Linn., which are eaten.—By* I. H. BURKILL and R. S. FINLOW.

3. *A method of producing immediate germination of "Hard-coated" seeds.—By* R. S. FINLOW and C. J. BERGTHEIL.

4. *Some Folk-Tales from Hasramaut.—By* LIEUT.-COLONEL D. C. PHILLOTT and R. F. AZOO.

5. *Narnaul and its buildings, Part II.—By* GHULAM YAZDANI. *Communicated by the Philological Secretary.*

6. *The Later Mughals (1707-1803).—By* W. IRVINE.

This paper will be published in a subsequent number of the *Journal.*

The Adjourned Meeting of the Medical Section was held at the Society's Rooms on Wednesday, December 11th, 1907, at 9-15 P.M.

LIEUT.-COLONEL G. F. A. HARRIS, M.D., F.R.C.P., I.M.S., in the chair.

The following members were present:—

Lieut.-Colonel W. J. Buchanan, I.M.S., Dr. Adrian Caddy, Dr. Arnold Caddy, Capt. F. P. Connor, I M S., Lieut.-Colonel F. J. Drury, I.M.S., Dr. Birendra Nath Ghosh, Lieut.-Colonel C. R. M Green, Dr. W. C. Hossack, Dr. E. R. Houseman, Dr. M. M. Masoom, Captain D. McCay, I.M.S., Captain J. W. D. Megaw, I.M S., Captain J. G. Murray, I.M.S., Major L. Rogers, I.M.S., Honorary Secretary.

Visitors:—Dr. J. A. Black and Dr. H. M. Crake.

The minutes of the last meeting were read and confirmed.

Captain F. P. Connor, I.M.S., showed cases of Recurrent Elephantiasis, skin disease treated by X-rays, and Symphosarcema.

Captain D. McCay, I.M.S., read a paper entitled "The significance of a lowering of the total salts in the blood as a determining factor in the causation of Black-Water Fever, with special reference to the use of Quinine Sulphate."

Lieut.-Colonel Harris, Lieut.-Colonel Green, Dr. A. Caddy, Major L. Rogers, and Dr. W. C. Hossack took part in the discussion.

Major L. Rogers, I.M.S., read a paper by himself and Captain J. W. D. Megaw, I.M.S., entitled "A Preliminary note on Blood Pressures as a guide in transfusion for Cholera." Lieut.-Colonel Harris, Captain Megaw, Dr. W. C. Hossack and Dr. Caddy took part in the discussion.

The paper of Captain Murray was postponed until the next meeting for want of time.

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